THE IRON AGE

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The Dwellings of Tomorrow

An Economic Study in Residential Construction Showing Why a Growing Use of Iron and Steel Is Inevitable

BY PRENTICE WINCHELL

This Toledo bungalow was built on a steel frame quicker and at less cost than with wood.

WHILE you are reading this page and the next—assuming that you are a rapid reader—one wooden dwelling house in this country will catch fire. There is no guilty foreknowledge on our part about this prophecy. We have been reading the figures on residential fires. The figures say that, on the average, a fire breaks out in someone's home every 4 min. of every 24 hr. in the year.

Consider that appalling fact for just a moment, from the standpoint of a civilized man. After the slow progress from the hillside cave and the thatched hut we have reached a state where our annual building bonfire amounts to one-tenth of all we build each year—over half a billion dollars in round numbers. We take expensive and well-considered precautions to protect our commercial goods and chattels, our warehouses and office buildings, factories and mills, but we do practically nothing to guard the lives and safety of our families and the property which belongs to them.

All this might be excusable, if it were possible to say that it were necessary. Time was when there were no building materials, save stone and brick, which would render a home fire-safe; and stone and brick were far beyond the economic reach of the vast majority of home dwellers.

But all that is changed. Perhaps it would be more accurate to say that it *ought* to be changed, that conditions are ripe for a change. For today we have building materials in plenty which can be used for small house construction and make the home safe, clean, strong and beautiful. These materials are in everyday use for buildings; they have proved their worth time without end. Yet, for the most part, they have been utterly neglected when small houses were to be built. Our cities are towering monuments to the strength and safety of iron and steel. Our mills and factories prove the economy of steel in a hundred different ways. And yet we continue to build two and one-half billion dollars worth of residences every year, most of them merely waiting for the match or five hundred million dollar bonfire.

Why Use Wood?

HERE an obvious question will present itself to the analytical mind. If houses could be built of materials which would not burn, which would be stronger and safer and cleaner than wood, which would last longer and permit more economical construction, why was wood used in the first place? The answer is equally obvious. For many years wood was by far the most available building material. When settlers came to America wood was the natural enemy of many. The clearing of a space for crops and cabin was the first task the pioneer faced. Wood was, economically speaking, a nuisance. Moreover, it was easily workable and adaptable to the tools and labor then available.

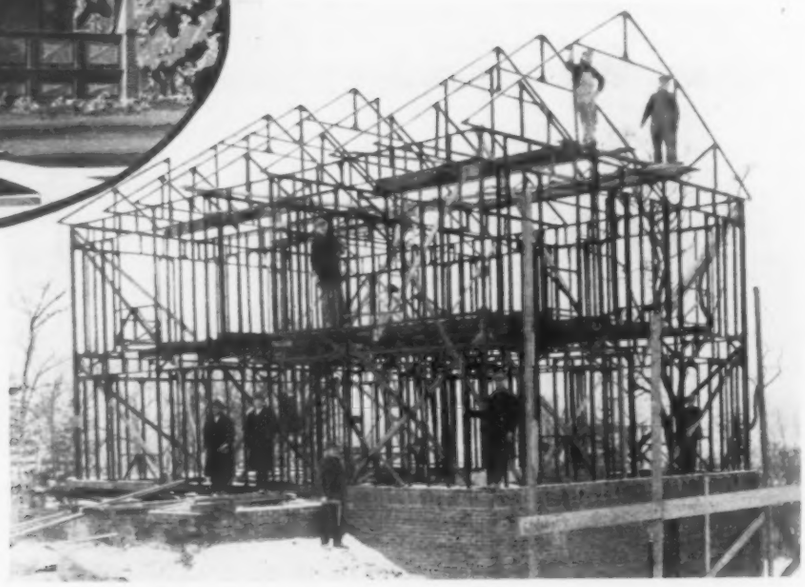
Iron and steel, on the other hand, were scarce. Steel as a building material is hardly three generations old. Moreover, when steel was young, the metal cost more, in proportion to wood, than it does today, very much more.

But, as the years roll back into history, an inevitable trend is discernible: wood becomes more costly; steel becomes cheaper. Of our original forest area, little more than half remains. Only one tree grows to take the place of four that are cut down, so rapid is our prodigal waste of forest resources. And naturally, as lumber becomes scarcer, wood as a building material increases in cost.

Steel production, on the other hand, has grown steadily and, unless all signs fail, will continue to grow for many years to come. And particularly because of this inevitable trend which favors iron and steel from the cost viewpoint, metals have already supplanted wood in numberless usages. The material advantages of steel have played their part in this transition—the steamship, freight car, automobile—all the forms in which metal now serves mankind. But behind and beyond them has been the inevitable economic pressure of higher prices for lumber and lower prices for steel.

It might be suggested that the use of steel for building depletes ore resources much as the use of wood depletes forest resources, but the parallel is inexact. Steel once used may be remade and used again (witness

A HOUSE built entirely of steel sheets, showing some of the possibilities of steel wall construction. This house has been in use several years to the complete satisfaction of the owner (left).



THE skeleton of one of the most successful types of steel-frame houses, employing an interchangeable unit type of wall and partition design. The 13 tons of steel used in this framework cost less than wood, as figured by a competitive builder, and the time and labor required to erect it was but little more than one-third the cost of framing a wooden structure of equal size.

the large part scrap has today in steel making)—a thing which is not possible to anything like the same degree with lumber.

Straws that Show the Wind

It was natural enough, then, for houses to be built largely of wood. Until recently wood was so plentiful and so economical that there was no urge to seek a better and a safer material for the construction of homes. But within the last few years has come an increasing realization of the need for better building materials for houses, not alone for palatial residences, but more especially for the average small house costing $10,000 or less.

And the signs pointing to the increased use of iron and steel for this purpose are so numerous, the advantages are so great and the utility so well proved, that it is hardly prophetic to say that the day of the iron and steel house is already here.

Nor need it be thought that the use of iron and steel for the building of a home precludes charm and beauty in a dwelling. Quite the reverse is true, as any thinking architect will tell you.

There have been some small buildings constructed of iron and steel which can hardly be said to incorporate the essentials of beauty, to be sure. But to say that the use of iron and steel for houses is limited to the corrugated garage or the recent box-like English type of workmen's dwelling houses is to assume that architectural ingenuity will suddenly become destitute overnight.

It is the recorded history of every building material that practical application precedes beauty of design. It is a far cry from the rude mud huts of the Nile Valley to the impressive temples of old Egypt, but the materials were essentially the same. To refer to our own country's development, would the Grove Streets and the Pleasant Avenues of our cities and villages look any the better for the crude log cabins of our ancestors in place of the neat and trim designs of today?

No, each new building material brings with it sufficient inspiration to the architect and builder to insure eventual beauty of design. A period of experimentation there may be—indeed, this period is well under way today—but to doubt that artistic homes can be built of the metals which span our rivers with tenuous bridgework, and support our slender skyscrapers, is to entertain suspicions of architectural intelligence. Steel

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"LET the public think of steel not only in terms of strength and trueness, but of beauty and sanitation, and I venture to predict that not more than ten years from now there will be one hundred times as much steel used in building construction as there is used today, and it will not take the form of imitation brick, stone or wooden shingles. I am picturing in my mind whole cities of homes of new and entirely unconventional designs, built of steel; insulated from heat and cold, just as modern safe cabinets are; painted and decorated along entirely new schemes of design, such as no doubt would strike our eye today as bizarre or even grotesque; electrically heated, lighted and equipped throughout. At the present time, sheet steel structures are pointed out as freaks, but one freak leads to another and when there get to be many of them, they cease to be freaks; they cease to be horseless carriages or sailless ships or rock-faced siding. They become automobiles and steamships and steel."

Phillip E. Graff,
Sales Manager, Simmons Co., Kenosha, Wis.

possesses by its very nature the strength and flexibility which may well bring about an entirely new type of residential construction, which may be responsible for the introduction of more graceful lines and more pleasing exteriors and interiors than were ever built of wood.

A Building Revolution

THE proof of all this is not far to seek. To surmise the revolutionizing of our gigantic building industry may require some imagination and give rise to a certain skepticism. But bear in mind that in a dozen different parts of this country today houses are now in use which employ a generous amount of iron or steel in their construction. Some of these houses have steel frames, some steel roofs, others steel walls, still others steel or iron stairs, doors, window casements, chimneys, tiles, trim and ceilings of metal in a dozen different forms. Not all of these houses are as successful as might be desired. Some of them have not worked out well from the cost standpoint. But the point is this: There have been built houses using steel for framework, roofing and walls which *have* proved successful, which *have* cost less than wood for similar construction, which *have* added to the strength and safety and long life of the homes of which they form a part.

In "the good old days" when lumber was cheap and craftsmanship was the rule, when day labor and painstaking work were the real foundation of housebuilding, a good house might last a hundred years or more. Look at a new row of wooden tenement houses. Ask yourself how they will look in fifty years. How many wooden houses of today will last more than two generations?

Yet a sturdier, safer and less expensive form of construction is waiting, ready for country-wide application when public interest has been aroused. With high rents, a growing population and increasing lumber costs due to a decreasing supply, how long will it be before the iron and steel industries awake to the opportunity which lies open before them?

A Limitless Opportunity

AN opportunity to create better homes for a nation, to make home-owning more practical for the man of small means and, of course, an opportunity for an enormous increase in business merely awaits action.

How much of an increase? The possibilities beggar the imagination. We build more than $5,000,000,000 worth of new construction each year, of which something like 45 per cent is for residential work, say $2,500,000,000 in round numbers for homes each year. The proportion of this huge sum which now goes to the iron and steel industry is, in the main, negligible. But to estmate the possible market for steel in houses at less than one billion dollars a year is to fail to appreciate just how deeply the inevitable trend toward iron and steel is exerting its pressure.

Henry R. Brigham, in a recent article in THE IRON AGE, made a conservative estimate of the amount of steel, lumber or framework which might take the place of wood for that one purpose, each year . . . and figured it at more than $200,000,000! A recent estimate of the market for new steel roofs (not reroofing) made by the Sheet Steel Trade Extension Committee runs to $200,000,000. Of the amount of money which might better be spent on steel doors, window casements, stairs, etc., than on wooden items—there is no estimate, but it is not unreasonable to suppose that it runs into many millions.

What of the day when America's annual building bill runs to $7,000,000,000 or $8,000,000,000?—a day that is, perhaps, not so far off as might be thought at first. Will the steel industry awake to its opportunities in time to make the most of them? Or will this great industrial giant lie dormant until others have literally dragged the market to its very door?

It is a fact that practically all of the preliminary experimental work on the use of iron and steel for houses has been done by architects, builders or individuals not directly connected with the iron and steel industry. How long will corporations which spend millions to reduce tonnage costs a few cents wait before adding their weight of effort to the transformation of American houses from comparatively short-lived, easily destroyed dwellings into strong, safe, beautiful and enduring homes of metal?

"There is one thing that is more powerful than all armies," said Victor Hugo. That thing is "an idea whose day has come." That is why the growing use of iron and steel for residential construction is inevitable.

The day of the metal house has come.

Photographs of houses employing metal construction, plans of the types of construction used and cost figures showing comparison with wood will follow in succeeding issues of THE IRON AGE

Technical Program for Institute of Metals

The regular spring meeting of the Institute of Metals will be held in London, England, March 10 and 11. The technical program follows:

"Note on the Softening of Strain-Hardened Metals and Its Relation to Creep," by R. W. Bailey.

"Note on the Corrosion of an Ancient Tin Specimen," by Prof. C. O. Bannister.

"Some Experiments on the Soft-Soldering of Copper," by T. B. Crow.

"Determination of Zinc Oxide in Brass," by B. S. Evans and H. F. Richards.

"Crystal Growth in Recrystallized Cold-Worked Metals," by W. Feitknecht (Berne, Switz.).

"The Interpretation of the Macrostructure of Cast Metals," by R. Genders.

"The Hardness of Cold-Rolled Copper," by Samuel L. Hoyt and T. R. Schermerhorn (Schenectady, N. Y.).

"Researches on the Nature, Properties and Conditions of Formation of Intermetallic Compounds with Special Reference to Certain Compounds of Tin.—Parts I-V," by W. Hume-Rothery.

"The Brittle Ranges of Bronze," by W. L. Kent.

"The Influence of Gases on Copper at High Temperatures.—Part I," by A. Glynne Lobley and Douglas Jepson.

"The Die-Casting of Aluminum Alloys—A Review of Current Methods," by George Mortimer.

"The Constitution of the Alloys of Silver and Tin," by A. J. Murphy.

"Striation Due to Working or to Corrosion in Microscopical Metallography.—A Contribution to the Study of the Mode of Action of Etching Reagents," by A. M. Portevin (Paris).

"The Copper-Rich Aluminum-Copper-Tin Alloys," by D. Stockdale.

"The Mechanical Properties at High Temperatures of an Alloy of Nickel and Copper, with Special Reference to Creep," by H. J. Tapsell and J. Bradley.

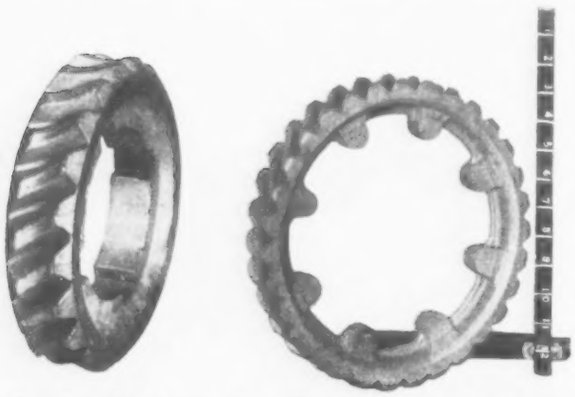
Iron and Steel Employees Draw Smaller Pay

WASHINGTON, March 1.—While the number of employees in 207 iron and steel plants in January, 1926, showed a slight increase to 248,948, as against 248,129 in December, the amount of the weekly payroll in January showed a decline to $8,627,213, or 2.4 per cent less than the weekly payroll of $8,840,066 in December, according to the Bureau of Labor Statistics, Department of Labor. Compared with January, 1925, the number employed in 204 iron and steel plants in January of the present year increased to 283,847, as against 282,631. The weekly payroll decreased ½ per cent to $8,601,515, as compared with $8,648,566.

Casting Chilled Bronze Gears

Three-Sided Chill Given Blanks for Worm Gears—What Process Has Done for Strength of Product

AUTOMOTIVE needs have been resulting in improvement of processes for producing material of all descriptions going into automobiles. This development has gone not only into the steel materials, but also into the bronze foundry, where necessity has forced improvement and development of new processes. In the plant of the Buffalo Bronze Die Cast Corporation, Buffalo, N. Y., special research work has been carried on in connection with making worm wheel blanks. Some of the developments leading to the present quality of blank are outlined below.



Phosphor-Tin-Bronze Gear Blank with Teeth Cast In (Left). The gear at right, originally cast in a blank, weighed about 15 lb. As pictured it has the tooth cast in, reducing the machining time considerably and weighing 11½ lb. This tooth, of course, has to be machined, to have a bearing or finished surface. The machining time on the solid blank was 12 min. and on the tooth cast in, 1 min. 56 sec. Over 15,000,000 lb. of these gears were made for the Ford car. The alloy is aluminum bronze, 90 per cent copper and 10 per cent aluminum

Extension of the worm wheel drive from the truck, bus and tractor to the passenger car has forced a portion of this development. Improvements in the engine and increased loads have exaggerated the demand for service from the worm wheel group or assembly. Increases in unit pressures bring the problem of proper application of those pressures and of proper design for taking them. In using worm gears for speed reduction gearing, the unit pressure often reaches considerable amounts, the same problem being met as in the automotive industry.

For many years it has been standard practice to make these gear blanks of an alloy known as stone bronze. This is composed of about 89 per cent of copper, 10 to 11 per cent of tin, and minute quantities of phosphorus. This alloy has successfully met most of the demands, but within the last year or two, with increasing requirements, there has been brought about a necessity for further improvement in the alloy. Not only was there required an improvement in its qualities, due to a change in its composition, but also an improvement in the methods of producing the casting.

It is well known that the chilling of tin bronze improves its quality by refining the grain and increasing the density. This results in giving the metal better physical properties, making it better able to accept without distress the heavy strains of present requirements and rendering it less liable to sudden failure. With this program in mind, the Buffalo company has been working in conjunction with the Timken Detroit Axle Co., and George F. Comstock, metallurgist, Niagara Falls, N. Y.

Dense castings, particularly at the point where pressure is applied, are definitely necessary for worm gears. Gear blanks cast in green sand from patterns are better than those cast in dry sand, because of the shorter cooling period or chilling effect of the green sand. To increase the chilling effect on the face or periphery of the gear blank a ring of iron or other chilling medium gives excellent results. In the machining of a gear blank so cast, however, a great part of the chilled area is removed in the hobbing machine, which leaves little improvement, by reason of the chilling, below the pitch line of the tooth.

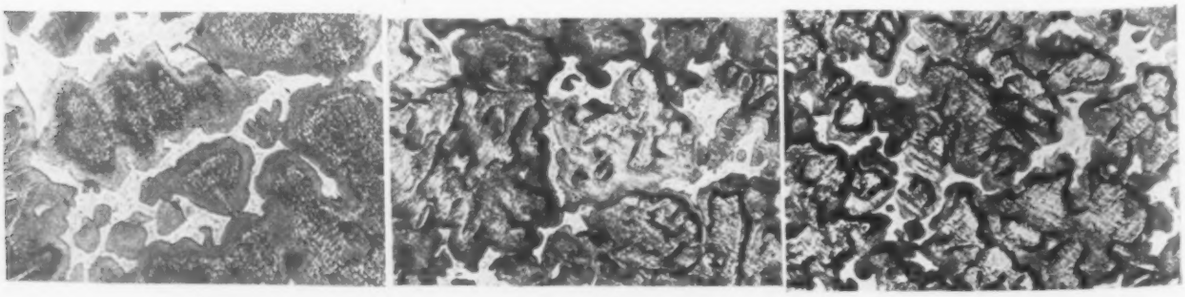
Three-Sided Chill

Effort to overcome this disability resulted next in casting a gear blank in which not only the face but both sides of the blank are chilled. In some cases as much as 85 per cent of the external surface of the gear is covered by the chilling agent. This results in a most uniform refinement of the grain of the metal. Photomicrographs of the different processes employed, as published herewith, show the successive improvement as the different steps were taken in the manufacture.

It has been found, as the average of many tests, that blanks cast in the so-called three-sided chill process show an improvement in physical properties of about 20 per cent over the blanks chilled only on the face or periphery.

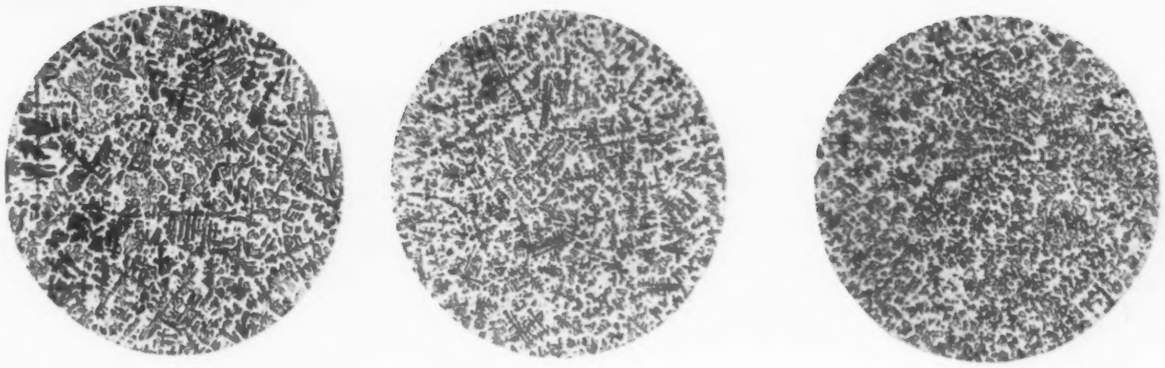
Centrifugal Castings

Another process worthy of attention is the casting of worm wheel blanks in a centrifugal machine. Application of centrifugal force to the liquid metal holds it under pressure against the chilling surface, while chill-



D E F

Samples Taken About ⅜ In. from Outer Corner of the Gear Section and Magnified 200 Diameters. D was cast with a ring chill and shows a coarse structure with irregular patches of eutectoid. E, cast in a three-sided chill, shows a finer structure and smaller eutectoid patches. F, centrifugally cast, shows a still finer and more uniform structure. The bright areas are eutectoid, the gray being the alpha solid solution. The black lines are the boundaries of the crystal cores or dendrites

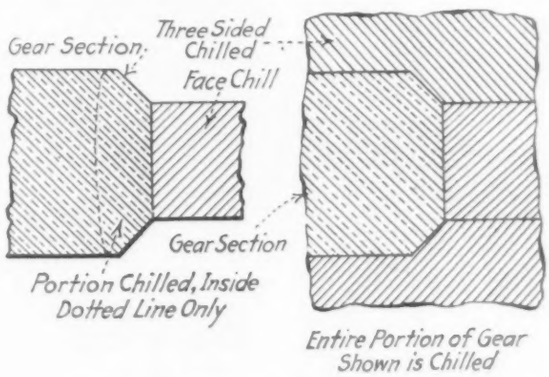


A B C

Sample A Was Cast in a Ring Chill. The photomicrograph, magnified 20 diameters, shows coarse dendrites or crystal cores. Sample B, cast in a complete or three-sided chill, shows fine but distinct dendrites. Sample C, centrifugally cast, shows a very fine grain with indistinct dendrites. The samples were taken about ⅜ in. from the outer corner

ing is taking place. This action prolongs the chilling period, which in any stationary chill method is terminated as soon as a moderate degree of shrinkage of the metal has occurred in cooling. Consequently the centrifugal process gives a much more rapid cooling and a very dense structure, as shown by the photomicrographs. Tabulated data show that there is a further improvement in centrifugally cast gears as the speed of rotation is increased and the pressure thereby raised.

While the making of gear blanks by the centrifugal process is somewhat more expensive than that in stationary chills, the demands for the superior metal are expected to reach a stage where the added cost will



A Sketch Showing the Portions of the Gear Blank Chilled Under the Two Different Processes. At left is the ring chill; at right, the three-sided chill. In the centrifugal process the chilling effect is the same as the three-sided chill, except that the metal is held under pressure while being chilled

perforce be assumed. At present, the development of the three-sided chill seems to give the highest quality for which the automotive field cares to pay. The extension to the more highly developed method of manufacture, therefore, is in the immediate future rather than the present.

In all of this work, temperature control is of high importance. It will be recognized that there is something of a drop in temperature between the first and last molds poured from a ladle holding 150 to 200 lb. of metal. By using the three-sided chill, with its rapid action on the metal, uniformity is obtained. With the centrifugal molds, temperature control will be still easier because the weight of metal taken from the furnace in each ladle will be just sufficient for one blank. Furnace control of temperature, therefore, is being substituted for the changing temperatures of regular foundry practice, thus resulting in greater uniformity of product.

In the development of a better gear blank the Buffalo company has brought out a new alloy called "B. B. D. C. standard alloy." This consists of 88½ per cent of copper, 10 per cent of tin, 1 per cent of nickel and ¼ per cent each of lead and phosphorus. This alloy has shown a marked improvement, particularly as regards elongation, compared with the customary stone bronze.

Casting in the Teeth

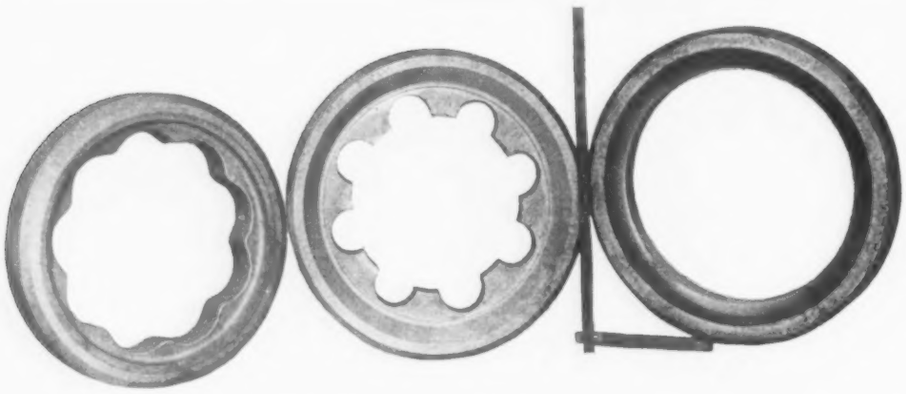
Aluminum bronze has been used extensively for gear blanks in some places. As a matter of fact, the Buffalo Bronze Die Cast Corporation made nearly 1,000,000 gear blanks of aluminum bronze for one customer. These were made with the teeth cast in and represented about 15,000,000 lb. of alloy. These blanks were 4 lb. lighter than solid blanks for the same size gears. The chief advantage, however, lay in the fact that the average hobbing time per blank was reduced from 12 min. in the solid blank to 1.56 sec. in the blank as cast with the teeth in it.

Aluminum bronze lends itself well to the die casting process. The gears made, as mentioned above, have proved very durable. As the strength of the material is much more than that of tin bronze, the breakage of teeth is practically unknown. The fact remains, however, that the bearing qualities of aluminum bronze will not withstand the application of so high a unit pressure as will tin bronze. That material, therefore, will require some development before it can displace the best tin bronzes.

The Buffalo company now is producing, commercially, tooth cast in blanks made of phosphor tin bronze, cast in metal molds. These blanks are used in passenger car assemblies. The saving in weight is about 4 lb.

Results of Tests, Showing Progressive Improvement in Quality with Successive Processes—Horizontally—and with Successive Alloys—Vertically

	Face Chill			Three-Sided Chill			Centrifugally Cast at 20 Lb. Pressure			Centrifugally Cast at 40 Lb. Pressure		
	Lb. per Sq. In.		Elongation, Per Cent	Lb. per Sq. In.		Elongation, Per Cent	Lb. per Sq. In.		Elongation, Per Cent	Lb. per Sq. In.		Elongation, Per Cent
	Yield	Ultimate		Yield	Ultimate		Yield	Ultimate		Yield	Ultimate	
Alloy No. 1....	21,750	30,750	8.5	28,900	41,900	5	26,750	46,200	12.25	28,750	48,500	14
Alloy No. 2....	26,500	42,750	15	33,900	44,866	3.6	28,500	43,250	12	31,600	42,600	5
Alloy No. 3....	30,750	38,200	4.75	34,200	43,075	3.75	33,500	49,100	10	33,000	49,500	12
Buffalo Bronze standard gear alloy	.....	.....	..	32,833	48,333	9.5	.....	.....	..	.....	.....	..



Three Gear Blanks of About the Same Size and Weight But of Different Design. All were made by the three-sided chill process

in favor of the tooth cast in blank over the solid blank. The saving in machine time is of considerable importance, when the number of units produced per day is as large as in the automotive industry. Experimental work is being done toward casting a blank centrifugally with the teeth cast in place. This should result in a still further physical improvement in the gear.

Both in the centrifugally cast and in the three-sided chill process the blanks are made in metal molds. This results in a smoother and better surface. Consequently it is possible to cast to closer limits of size, which eliminates machine finish both on the sides and on the face. There is here a saving of metal, as well as saving in cost of the later operations. The gear blank shown in one illustration is 6½ lb. lighter than when cast in the ring chill process.

It is obvious that greater strength in a gear means naturally the use of a smaller gear for a given work. With the low-slung cars now in vogue, greater road clearance is thus provided than where the gear is larger. Moving the gear train to the rear of the car gives greater space within the car and other important advantages follow.

It is pointed out by T. W. H. Jeacock, president Buffalo Bronze Die Cast Corporation, that the whole procedure is a matter of foundry practice. There is little innovation in the methods outlined, but practices which can be improved upon are being gradually eliminated as the improvements are made. By thus utilizing only those methods which give the best results, he expects to place his plant in a particularly secure position in connection with making bronze gears. The present melting capacity at his disposal is about 75,000 lb. per day.

Two Gears Used for Similar Jobs (at Left). One customer buys blanks with the tooth cast in and the other the solid blank. The solid gear weighs 45 lb. and the gear with the tooth cast in weighs 38½ lb. The solid gear is made in the three-sided chill process and the gear with the tooth cast in is made by coring out the tooth section. The gear blank at right, when cast in the face-chilled process, weighed 98 lb. Cast in the three-sided chilled process, it weighs 86 lb., a saving in weight alone of 12 lb. The saving was effected because, under the three-sided chilled process, the gear blank was cast to closer tolerances, consequently eliminating finish

Tensile Strength of Belgian Bars Claimed Lower Than British and German

In a recent suit before the Mayor's and City of London Court, a decision was rendered to the effect that ordinary Belgian reinforcing bars were not of the same tensile strength as the British product, according to a European correspondent of THE IRON AGE. The dispute was over the delivery of Belgian bars to a British consumer, which did not meet the British standard specification for buildings. It was decided that the British tensile strength is usually 28 to 32 tons per sq. in. (62,000 to 72,000 lb.) while the Belgian standard is generally 23 to 28 tons per sq. in. (52,000 to 62,000 lb.)

Recently the Chamber of Commerce of Essen in Germany, following tests, made the statement, the correspondent adds, that Belgian bars of the ordinary grade had not sufficient tensile strength for use in modern buildings.

Dr. S. C. Lind to Receive Nichols Medal

The William H. Nichols Medal will be presented to Dr. S. C. Lind, associate director Fixed Nitrogen Research Laboratory, Washington, on Friday evening, March 5, at the Chemists Club, New York. Previous to the presentation, addresses will be delivered by Dr. Colin G. Fink, Columbia University, and Dr. Arthur B. Lamb, Harvard University, who will take as the subject "Lind, the Chemist." Doctor Lind, in his address of acceptance, will take as his subject "Chemical Activation by Alpha Particles."

Seamless Steel Tube Manufacture*

Continental Mills Cramped for Space—Raw Materials and Steel Quality—Handling in Furnace

BY PAUL CEBRAT

THERE seems to be no doubt that the Pilger process is the most successful method of producing seamless tubes from about 6 in. to 16 in. diameter. The tubes thus manufactured have a fairly good finish, can be produced in long lengths, and they are claimed to be of superior quality, having a better structure and being longer lived.

For tubing 6 in. and under the automatic mills, as used in this country, have some advantages over the Pilger mill in tonnage production. The length of tube, however, is limited, 25 ft. being considered the maximum, and the scrap loss is higher. The same applies to continuous mills. In addition, the upkeep is claimed to be higher and, furthermore, the steel required for piercing and rolling must be of a certain quality.

Both these types of mill have practically outlived their usefulness on the Continent, the principal claim of mill men against them being that they require better steel than it is possible to secure and that tubes made on such mills are of inferior quality and a considerably lower yield is obtained than from a Pilger mill. At some plants, existing continuous mills are being replaced by Pilger mills; at others, such mills are operated only part of the time, for lower-grade tubes, and when there are sufficient orders on hand to keep all other mills busy.

Pilger Mills Preferred

It seems, therefore, that even for sizes from 6 in. down to 2 in. the Pilger mill has distinct advantages over other types of seamless tube mills. Recently the push-bench method has been strongly advocated by some mill builders for producing tubes from 2½ in. to 4 in. or 4½ in. outside diameter in lengths of about 22 ft. Low cost of installation, good tonnages and yield and economical operation are claimed.

Pilgered tubes, particularly the larger sizes from about 6 in. up, are, in nearly all Continental mills, practically finished as far as size and roundness are concerned after they leave the Pilger mill and are hot sawed and straightened. After that, they go to the final finishing department for milling the ends, upsetting where necessary, inside or outside, testing, threading, inspecting and shipping.

For usual commercial requirements this seems sufficient, although some tube mill specialists recommend a sizing mill after pilgering, but do not consider this absolutely necessary. Others are strongly recommending the installation of a reeling machine after pilgering and, following that, a sizing mill and cross-roll straightening machine. Such installations have actually been made and are being made. The great majority of plants, however, operate at present without this additional equipment.

Using the Bell End

Since, for mechanical reasons, it is not possible to push the entire length of the pierced ingot through the Pilger rolls, a bell-shaped end remains on one end of the tube. On a considerable amount of piping, 4 in. and up to 15 in., this bell, instead of being cut off by the hot saw, is retained and, in special presses, is formed into a shape similar to the bell end of cast iron bell and spigot pipe. The tube is then spirally wound with tar soaked burlap in a very simple machine and widely used for water and gas lines. It is claimed that such piping outlives cast iron pipes, is less subject to electrolytic corrosive action, on account of the tarred burlap covering acting as an insulator, saves considerable in freight and decreases materially the cost of handling and laying on account of lighter weight and being furnished in lengths up to 50 ft.

Cramped Quarters in Europe

Most of the German and Continental tube mills, with few exceptions, have been built on available, usually limited, ground, after replacing other units which only in rare cases permitted expansion and were rather cramped in the beginning. Nearly all Pilger mills started on a small scale, additions were made from time to time, installing new units in the most convenient, available space, without any definite plans for these and future enlargements. Consequently, the movement of material is in most cases awkward and uneconomical, particularly in the finishing departments, where a considerable amount of avoidable moving and handling of material, crossing and interferences take place.

It is typical of Continental practice that not a mill was seen which was properly designed for rapid work and nobody seems to think there is any reason for more speed. This may be partly explained by the fact that Continental, and particularly German, tube mills have only a limited home market for their product and have to depend chiefly upon export trade under strong competition among the various countries. And, at that, German tube mills are operating at hardly more than 40 to 45 per cent of their capacity.

Another reason for the comparatively low tonnages produced is that most of the mills are rather limited in furnace capacity. At several plants visited, figures were given as to the tonnages that could be rolled in those mils, if sufficient orders were on the books to insure steady and economical operation. When analyzing such figures the above stated facts must be kept in mind, as well as that all German mills operate on 12-hr. turns.

Actual working hours are 6 to 8; 8.15 to 12; 1.30 to 4; 4.15 to 6; on Saturdays, 6 to 2.15 and 2.15 to 10.30. These frequent stoppages and interruptions, particularly the long lunch hour—the German midday meal being the principal meal—have no doubt an adverse influence on the efficiency of the men and the tonnage produced, as well as on the quality of the product and the yield, as the steel in the furnace must be kept hot, but should not be over- or under-heated during the idle hours.

A rather curious and surprising remark was made in one of the mills to the effect that this mill had so far refrained from establishing piece rates on a tonnage or running foot basis for the reason that, since there are insufficient orders, they do not want the men to work too fast, which would surely be the case, were they paid at piece rates.

Raw Materials

A general statement was made and repeated by the operating men of different works to the effect that one reason for the prevalence of Pilger mills in Germany, versus the greater number of automatic, Stiefel and other mills in America, was the inferiority of German steel, which could be worked successfully and economically only by the Pilger process—a combined rolling

*Concluded from our Feb. 18 issue. The author is with Perin & Marshall, consulting engineers, 40 West Fortieth Street, New York.

and forging—but would not stand up in the plain rolling process.

It was impossible to arrive at a conclusion as to the exact reasons for this statement, since it is a well-known fact that Germany is fully able to make steel of proper analysis and physical properties. But there seem to be certain defects in the structure of the German steel generally used for tube making, possibly due to operating conditions, to the prevalence of Thomas steel or to the general endeavor to produce steel as cheaply as possible, which have given cause to this broad statement. It is also well known that only after several failures, and only in certain steel plants of America, is a steel satisfactory for making seamless tubes being made.

Difficult to Make Satisfactory Steel

Steel makers of all countries have made special efforts to produce a flawless steel for tube manufacture, but only a few have succeeded, and even their product is not always dependable. Operating conditions offer so many opportunities for a slip on some minor detail, and are so widely different in the various steel-making plants, that at present the question of eliminating entirely the usual defects must be considered still more or less unsolved.

The analysis of the steel required for tube mills depends, of course, principally upon the specifications for the finished tube. In a general way it may be said that, for oil well casings, drill pipes, etc., a steel of 0.30 to 0.40 per cent carbon is required. For other piping, such as line piping, boiler and condenser tubes, etc., a mild steel of 0.10 to 0.12 per cent carbon is used.

As a rule, all German Pilger mills use a bottom-cast ingot, slightly tapered, of the proper length to make one tube of as great a length as possible. Ingots below about 10 to 12 in. diameter and down to the limit of about 5 in. are usually cast for two or three lengths of tube and are broken in a vertical or horizontal hydraulic press, the latter being more generally used. For small tubes requiring rounds of 5 in. or less to be pierced, hot-sawed rolled rounds are used, as a rule, although cast ingots as small as 4 in. diameter were seen. Push-bench plants, piercing by hydraulic press, use a rolled square billet.

Machining the Ingot

A feature seen at one rather antiquated, small Pilger mill, casting its own ingots, was that the skin was turned off the ingot in a shaft lathe. The engineer in charge claims to have increased the yield by 10 per cent, thereby more than offsetting the cost of turning the ingot. He also stated that a large tube mill is contemplating skin turning of all ingots. This may be one solution of the problem confronting seamless tube makers, that of discovering and, to a certain extent, removing some of the surface defects of cast tube ingots, such as shrinkage cracks, scabs, laminations, etc.

A recent development in regard to raw material for seamless tubes is the casting of hollow steel ingots by the centrifugal method. Based on the principle and the experiences in making cast-iron pipe by the De Lavaud process, experiments have been carried on for some time. It is claimed that success has been attained in making centrifugally cast steel castings. Should all the claims made for this process be found true, it would mean a radical departure from present methods of piercing, would decrease the fuel required before pilgering and would allow pilgering at a relatively higher temperature. There is no doubt but that further developments in this direction will be followed with the greatest interest.

Fuels, Furnaces and Rolls

All kinds of fuels are used for firing the ingot-heating furnaces, the one most commonly used being producer gas. One furnace observed was fired with blast furnace gas, which was cleaned by dry and wet cleaners for the gas engines at the blast furnaces. Part of it then was taken through an overhead pipe line a distance of 8200 ft. to the tube mill, with a 3,500,000 cu. ft. gas holder about 3500 ft. from the tube mill. Gas comes to the mill at about 2 lb. pressure and contains 112 to 118 B.t.u. It is burned in a patented Siemens regenerative furnace.

Another mill uses producer gas which is generated from a low-grade brown coal in a central producer plant, goes through a cleaning plant with tar recovery and is delivered to the various furnaces with a heating value of 185 B.t.u. Prof. W. Trinks, in an article in the January issue of *Fuels and Furnaces* gives some interesting facts about these tube mill furnaces.

The ingot-heating furnace is of the greatest importance, since it is absolutely necessary for the ingot to be thoroughly and uniformly heated. To minimize the rejections resulting from an improperly pierced ingot, the temperature of the ingot when drawn from the furnace should be about 2200 deg. Fahr. Most furnaces seen are of the continuous type, built to take two rows of ingots, and are regenerative furnaces, while a few smaller mills use recuperative furnaces. All furnaces have a slightly inclined brick hearth, water-cooled skids being an exception. Ingots are charged, without exception, in the same position.

Hand Manipulation in the Furnace

While it is possible to push the ingots down the furnace by means of an electric or hydraulic pusher, this method is not desirable and is rather objectionable, as it is impossible to get a good soaking heat all around the ingots unless they are kept separate and rolled over singly. Being slightly tapered, it requires the services of at least one man on each side of the furnace, with a long crow-bar, to move and straighten the ingots on their downward progress.

Projects of new installations include, without exception, a machine for this purpose, but only one German mill was seen operating such a machine. It is built somewhat on the order of an open-hearth charging machine traveling on tracks the length of the furnace and having a ram movement forward and backward (in and out of the furnace), a radial movement of the ram in the horizontal plane to straighten the ingots and move them forward, and an up-and-down movement to follow the incline of the hearth.

Rolls

One of the most vital parts of the Pilger mill is the roll. The proper material and the pass design and finish, theoretically correct as nearly as possible, may be one of the determining factors in the success or failure of a Pilger mill.

As the rolls are expensive, the frequent breaking of rolls will cut heavily into profits. Improper pass design or finish will not only decrease the yield, by increasing the number of faulty tubes and rejections, but also cause excess wear on the mill itself and its auxiliaries. Up to a recent date the finishing of the offset groove in the Pilger roll was done by lathe work in combination with milling, shaping, grinding, etc.

A roll turning lathe has, however, been put on the market by H. Becker & Co., Düsseldorf, which is a remarkable improvement over former methods and eliminates entirely the personal element in finishing these rolls. It turns automatically the groove theoretically correct from the solid. This practically protects the rolls against breakage due to faulty finish, insures a uniform rolling process and decreases rejections, reduces the wear and tear of rolls, mandrels and mill. All Continental mills are now using this lathe except those which, for financial reasons, have not yet been able to purchase one. Orders for such lathes are usually included in contracts for new mills.

Domestic sales of oak leather belting in January are reported by the Leather Belting Exchange, representing about 60 per cent of the total product, at 370,678 lb., valued at $638,679, or an average of $1.72 per lb. This was a considerable gain over the December figures of 343,443 lb., valued at $598,965, or $1.74 per lb. It was much lower, however, than figures of January, 1925, when the amount was 409,252 lb., valued at $686,316, or an average of $1.68 per lb.

Preparing and Testing Molding Sands*

Mining Engineers Discuss Modern Methods—Special Sands—Confusion in Grading

SOME excellent papers on molding sands were presented at a session on "Non-Metallic Minerals" on Monday morning, Feb. 15. Of the seven papers scheduled, several had a decided appeal to foundrymen. It was rather unusual for such papers to appear on the institute's programs.

At one of the coal sessions an interesting paper was entitled "The Selection of Coals for the Manufacture of Coke" by H. J. Rose, Koppers Co. Laboratories, Mellon Institute, Pittsburgh. It is liberally illustrated with diagrams and photographs of coke structure. At another session, Ralph H. Sweetser, American Rolling Mill Co., delivered a paper on the "Evaluation of Coal," an abstract of which will be presented in a later issue of THE IRON AGE.

An important contribution to the heat treatment and handling of drill steel was presented at a session on mining methods Wednesday morning, under the title "The Sharpening and Handling of Drill Steel at Franklin, N. J." by C. M. Haight, mining engineer, New Jersey Zinc Co., Franklin, N. J. It describes apparatus for the sharpening of drills and a heat treating machine for keeping the drills at a high degree of efficiency on a large scale.

The features of the papers on molding sands follow:

Standard Tests for Molding Sands

The importance of devising standard laboratory tests for molding sands was emphasized by Dr. H. Ries, professor of economic geology, Cornell University, Ithaca, N. Y., at a session devoted to non-metallic minerals, held Feb. 15. Considering the large number of non-metallic minerals that are used, said Dr. Ries, there are not a few for which there are no standard laboratory tests to be employed in determining their properties or even standard specifications on which grades or market price may be based. Standard laboratory tests would, he said, enable the consumer to state definitely what he needs, and is of great assistance to the producer. It would also reduce misunderstandings and disputes. The title of Doctor Ries' paper was: "The Use of Standard Tests of Molding Sands."

Sands, it was pointed out, vary widely in character from very coarse to very fine, and from very clayey to those that are practically free from clay. For this wide range of sands there is a corresponding variety of uses, which are based mainly on the physical properties of the sand, although these are not always definitely stated. The chemical composition need rare'y be considered if the sand is of siliceous nature.

The lack of uniform methods for measuring and expressing the important properties of sands for foundry work, bonding strength, permeability, texture, refractoriness and life, was stressed. A number of tests for determining the properties of foundry sands have been described and used by different persons both in Europe and America, but as a rule the results have not been comparable, because the tests were not made under uniform conditions. That the results were not comparable, said Dr. Ries, was overlooked by many, until the problem had been carefully studied. The work of the joint molding sand research committee organized by the American Foundrymen's Association and the engineering division of the National Research Council in obtaining data on which the formulation of standard methods of testing could be based was referred to. The tests recommended include those for measuring the fineness, permeability, bond, and dye absorption. There remains to be developed standard methods for determining the refractoriness and life of the sand, for expressing the grade or texture, by a single figure if possible, for testing the properties of core sands and core mixtures, etc. It was said that much progress has been made in formulating these.

The proper use of the data obtained by means of standard methods of testing was characterized as of prime importance, because there exists some misconception in the matter.

The question: "What permeability, bond strength, etc., a sand should show if it is to be used for casting iron, brass or some other metal?" cannot be answered definitely, said Dr. Ries. Sands showing a fairly wide range of certain properties at least, can be used for casting any one of these metals, and the type of sand used is governed in part by the fact that the size alone will affect the type of sand to be employed. Artificial causes, such as method of venting the mold, may exert a controlling influence. It was said to be probable that some day we shall be able to state, for example, that a sand to be used for brass castings up to, say, a certain size, should show a certain range of permeability, bond strength and fineness, but this cannot be done until more data are obtained. It was considered that this, however, does not detract from the value of the standard tests, the widespread acceptance and employment of which has demonstrated their usefulness in other directions. They can and should be used both as a check and as a form of specification, said Dr. Ries.

It was said that there is apparently no valid reason why the consumer should not demand a sand showing a certain range of permeability, bonding strength, dye absorption and texture. Some foundries are purchasing sands on this basis, and it is Doctor Ries' opinion that this practice will spread.

The use of standard tests will be, it was stated, in the foundry where the foundryman finds that the best results are often obtained by keeping the properties of his heap sand close to certain values of moisture, permeability and bonding strength. Foundrymen now using these standard control tests in their daily work were said to be effecting savings by reducing defects caused by bad condition of the sand.

Grading Sands

Confusion was said to exist in the grading of sands. The term grade refers solely to the texture of the material and at present there is no uniformity in expressing it. Some producers grade their sand according to numbers and others according to letters, each adopting his own series. Even in the same district, the same numbers may not represent the same grade when used by different producers. That situation, it was pointed out, calls for a speedy remedy. Uniform grading is of particular value to the foundryman who may desire to obtain sand from a source hitherto not drawn on. A subcommittee of the American Foundrymen's Association is now working on this problem.

Mining and Preparation of Molding Sand

Foundry sand producing operations typical of the areas in New York and New Jersey were interestingly described by R. M. Bird of the George F. Pettinos Co., Philadelphia, at the same session. The title of Mr. Bird's paper was "The Mining and Preparation of Molding Sands," and the operations described dealt particularly with those of the Pettinos company. The mining of Albany sands was discussed, then the Lumberton sands of the Mount Holly, N. J., district, and finally sands from the South Jersey, Millville, district. Operations at the latter district were taken up in some detail and the mining, handling, mixing and barge load-

*Crowded out of committee report of the Annual February Meeting of the American Institute of Mining and Metallurgical Engineers in THE IRON AGE, Feb. 25.

ing equipment shown by lantern slides. The hydraulic mining of core sand was also outlined.

Discussion following Mr. Bird's paper centered on the differentiation of sharp and strong sand, and on the use of bentonite as a bond for molding sand. Sharp sand, it was said, is a silica sand containing very little bond. The bond necessary to put a sand outside of the "sharp class" is a matter of tradition and opinion. Some foundries classify 12 per cent bond as sharp. One opinion expressed was that sharp sand is one that has no strength when pressed in the hand; and, conversely, a strong sand is one that has strength when so pressed.

Bentonite and Some of Its Uses

Although excellent in itself, bentonite was considered by some as outside of the realm of practical application, because of the cost of transporting it in large quantities to the sand mines. It developed that one steel foundry has been experimenting with bentonite with good results, and regards the material as having good possibilities. A one per cent mixture of bentonite was said to have been found satisfactory. The refractoriness of bentonite was brought up, and one speaker said that, although fusing tests have not been made, the material apparently does not affect the refractoriness of the sand. The possibilities of obtaining bentonite at lower costs from Virginia, Tennessee or Kentucky districts was mentioned.

The sources of supply, mining, preparation, uses and properties of special sands were comprehensively outlined in a paper on "Preparation and Use of Industrial Special Sands," by W. M. Weigel, mineral technologist United States Bureau of Mines, Washington. Quartz sand, it was said, constitutes by far the greater bulk of sand production, but there are other grades used for industrial purposes that may be grouped under the general name of special sands. Under this group were placed molding sand, glass sand, filter sand, sand blast sand, engine sand, potters' sand, abrasive sands, sands for pulverizing, roofing sand, flooring sand, fire or furnace sand, sand for chemical and metallurgical purposes and others. In discussing each of these special sands their characteristics or specifications were given. The possible by-products in the preparation of sand was briefly dealt with, and lines of research into the preparation and utilization of these special sands were suggested.

Making Bungalows of Cast Iron

New Development in England—Comparisons with Steel Houses—Durability and Cost

HOUSES made of steel in Great Britain are by no means new, but bungalows made of cast iron are decidedly novel. A double bungalow, made largely of cast iron, has been designed and constructed by Walter Macfarlane & Co., Glasgow. The outer walls are composed of standardized cast iron plates, which are a patented construction.

A brief article in a recent issue of the London *Iron and Coal Trades Review* points out that the life of such a structure is an important factor in its favor; that, if painted every five to seven years, the life of the cast iron plate would be almost indefinite. In appearance the structure itself has little in common with the steel house. There are no external bolts or screws and, as the plates are rough cast, when they are painted there is little to distinguish them from an ordinary building of stucco.

It is stated 100 bungalows of this type could be erected at the rate of two a week.

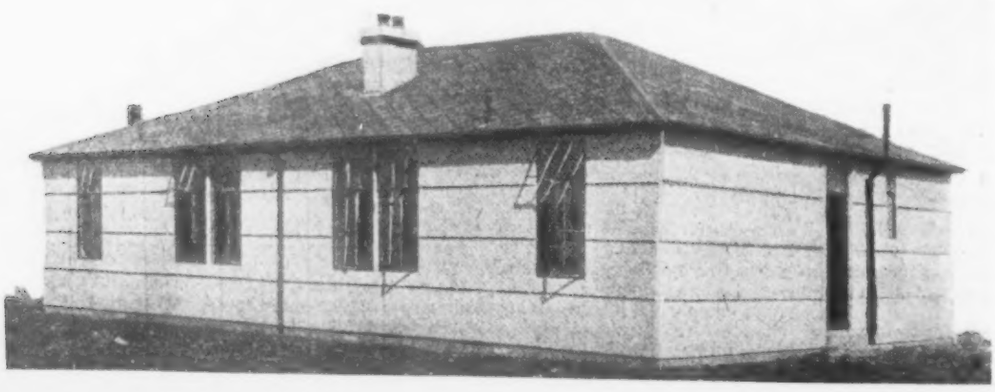
The plates are made of a uniform size, 3 ft. 7½ in. long x 2 ft. 6½ in. pitch, the upper and lower edges being formed as male and female joints, so that the overlap forms a weatherproof joint. They are 5/16 in. thick, rough cast on the outside, and have pockets cast onto the inside which are prepared for the reception of bolts. The plates are secured to cast iron mullions placed at 3 ft. 7½ in. centers, the lower ends of the mullions being embedded in a concrete foundation. Provision is made in these mullions for carrying wooden battens to which is secured the fiber-board lining which forms the inside walls, an air space of 3 in. being allowed between the outer walls and the inner lining.

The roof is formed of light steel trusses with wood boarding, felt and russet-brown asbestos tiles on top. The chimney walls and partition between the two bungalows are of brick, the partitions between various rooms being of wood-framing, with fiber-boards on both sides. The window frames are of steel and the casements of uniform size, all windows opening outward.

The floor area of the single bungalow is 788 sq. ft., of which the living room occupies 228 sq. ft., first bedroom 157½ sq. ft., and second bedroom 156 sq. ft. The remainder of the space is taken up by kitchenette, larder, bathroom and a square hall in which all doors are convenient to one another.

The kitchenette has a gas boiler, double sink, dresser, larder, shelves, etc., a coal bunker and a cupboard with shelves being also provided. The bathroom is provided with a cast iron enameled bath and a cast iron enameled wash basin.

"Obviously the cast iron structure will be somewhat heavier in first cost than the steel house," say the promoters, "but this may be more than counterbalanced by the longer useful life. The general appearance is also so much in its favor—a fact which has to be reckoned with, as even the present house shortage has not killed all sentiment in the prospective householder and made him wholly indifferent to elevation and appearance."



General Appearance of the Cast Iron Bungalows Built at Glasgow

New Internal Grinder

Rough and Finish Grinding, and Sizing of Work Done Automatically—No Gages Used

The Heald Machine Co., Worcester, has brought out an internal grinding machine, styled the Size-Matic, which is fully automatic with the exception of loading and unloading the work, and possesses the novel feature of sizing the work without the use of plugs or other gages. It grinds not only ordinary plain holes, but small holes, tapered holes, blind holes or holes with key-ways or slots. It is claimed for the machine that the sizing being independent of the work, it is as nearly universal as a plain tool, the operator being able to handle a miscellaneous class of work easily and yet do it automatically. Furthermore, it is pointed out, the setting up of the Size-Matic mechanism is simple, making possible its economical use for short runs of work. With the exception of the sizing feature the machine is identical with the full automatic described in THE IRON AGE of Sept. 3, 1925.

In the new machine the sizing indicator box used on the full automatic is eliminated. Substituted for it

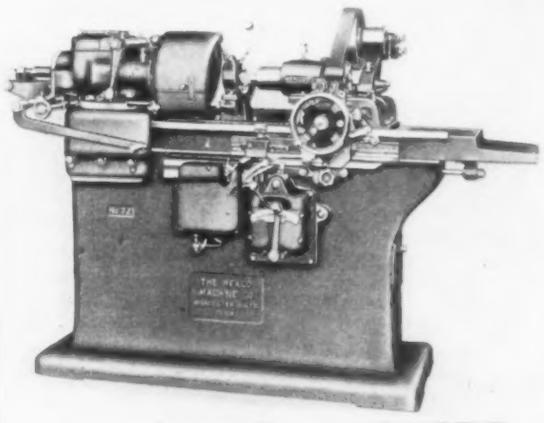


Fig. 1—Front View of Size-Matic Internal Grinding Machine. Operation is fully automatic, except loading and unloading the work

is the control in the cross-slide and diamond. The automatic cycle of operation is as follows: After the operator has loaded the chuck he throws over the reverse lever, causing the wheel to advance to the work at full speed and then slow down to a roughing speed, at which it continues to grind until the hole has very nearly reached finish size. Then the head withdraws from the work, the diamond drops into place and the wheel is trued at truing speed. The wheel next changes to a finish speed, with finish feed, and when finish size is reached withdraws from the work, completing the cycle. From first to last the action is automatic.

As will be noted in Figs. 2 and 3, back of the hand-wheel is an adjustable ring which carries the cam *B* over which ride the points *A* and *B*. These points actuate the contacts on the magnet box on the front of the machine which control the movements of the diamond truing device and the bringing of the machine to rest position when the piece of work reaches finish size. Point *A* controls the truing operation and point *B* the finishing operation.

The sizing is accomplished as follows: Having set the diamond to true the wheel at a predetermined point in relation to the finish size of the hole, it becomes a simple, positive action to advance the cross-slide a definite amount, which amount is determined by the distance between contacts *A* and *B*. The wheel has just been trued, presenting a clean, sharp surface to the small, definite amount of stock to be removed. The feed is fine and the speed is correct. Exact duplication is assured as long as the relationship of point of truing and the finished surface remains unchanged. The cam *B* is a part of the hand-wheel and assumes exactly the same position for each successive piece at the time of truing and at the time of finishing. Therefore, the number of passes of the wheel through the work is exactly the same for each piece.

The remaining essential factor in insuring exact duplication of work lies in compensating for wear on the wheel due to grinding and truing. Therefore mechanism is provided to advance the cross-slide auto-

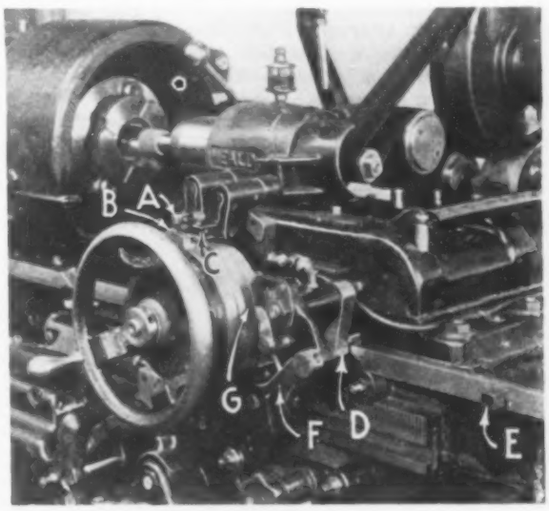


Fig. 2—View of Cross Slide, Showing Cam and Contact Points; also Arrangement for Compensating Wheel Wear

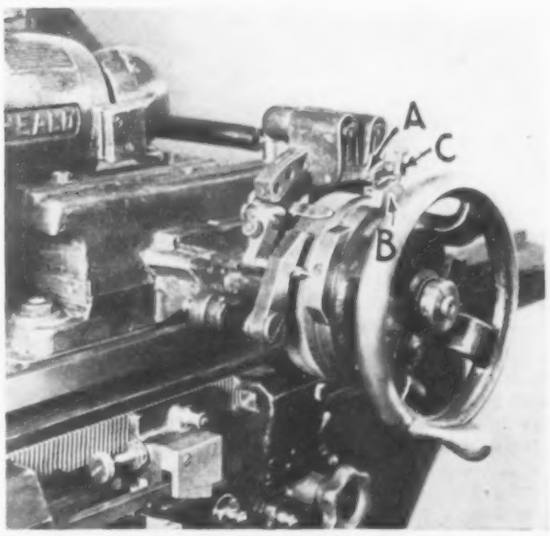


Fig. 3—Left-hand View of Cross Slide, Showing Pawls and Arrangement for Securing Roughing and Finishing Feed

matically each time the machine comes to rest, with a piece completed. The ratchet *G* anchored through reduction gears to the cross-slide screw, is actuated by the pawl *F*, which itself is operated by the pawl *D*, as the latter rides over pin *E* as the main table comes to rest position. This action causes the cross-slide to advance 0.001 in. or any other amount required in the necessary compensation for wheel wear. This advance does not change the relationship of the cam and diamond.

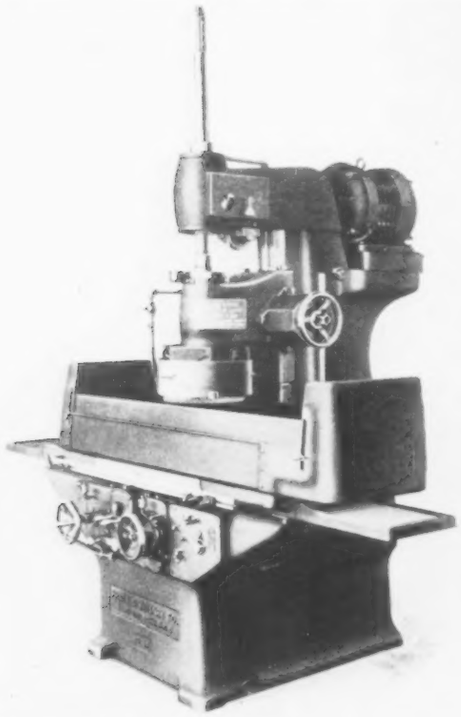
Seven double-acting gas engines are to be supplied by the Worthington Pump & Machinery Corporation for the United Fuel Gas Co., Charleston, W. Va., all having 22 x 36-in. cylinders and four of the engines being of the twin tandem type.

Improves Surface Grinder

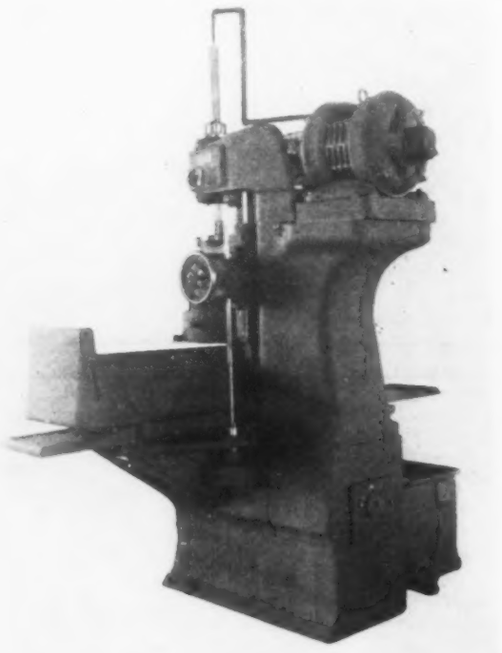
Wheel Spindle Driven Directly by Motor Through Bevel Gears—Added Features Claimed to Increase Output

A new design of vertical surface grinder, the chief improvement of which is in the method of driving the grinding wheel, is being placed on the market by the Pratt & Whitney Co., Hartford, Conn. In design, the new machine, designated as the model B, is based on the model previously offered by the company. It is likewise built in 14-in. and 22-in. sizes, the 22-in. grinder being available with either 4-ft. or 7-ft. beds.

The previous model had a belt-driven spindle, using a quarter-turn belt running from a driving pulley at the rear of the bed up over idlers to a large pulley on the spindle. It is stated that, although this arrangement provided smooth operation, it had the disadvantage of extreme belt tension, which has a detrimental effect on the spindle bearings. Belt maintenance costs are also high.



The Wheel Spindle Is Driven by the Motor on the Top of the Column, the Arrangement of Which Is Shown in the Rear View, Below. From the motor, the drive is through circular bevel gears. The direct-connected motor is claimed to give increased power without heavy belt tension on the spindle



The new machine is motor driven, with the motor mounted on a bracket cast in the rear of the top of the column, as shown in the accompanying rear view illustration. This motor drives the grinding wheel spindle directly through a right-angle drive using circular bevel gears of heat-treated alloy steel. The 14-in. grinder requires a 25 hp. 1750 r.p.m. motor and the 22-in. machine, a 40 hp. 1150 r.p.m. motor.

Much research in gearing a motor directly to a grinding wheel has preceded the application of the drive used in the new grinder. This research is said to have disproved the idea that a grinding wheel spindle must be belt driven in order to obtain satisfactorily smooth operation.

In order to mount the motor properly the entire column has been made heavier and more rigid. The wheel head and spindle mounting are also heavier, and this stiffening of the new machine is credited with providing smoother and more accurate action than obtained in the previous design. The direct-connected motor is claimed to give increase of power at the wheel, without the necessity of heavy belt tension on the spindle. This extra power is stressed as making it possible to increase production materially. The grinding wheel spindle is mounted on ball bearings which are fully protected from dirt and moisture. Friction is reduced markedly by the ball bearing mounting, the wheel being easily turned by hand. The grinding wheel is mounted on a face plate bolted to the spindle so that it may be removed conveniently.

The wheel heads of both sizes of machine are counterweighted for easy and rapid adjustment, and to prevent the wheel from sagging. To further provide against wheel sag the entire spindle is floated on stiff springs which take up any slight wear which may occur. The grinding wheel feed controls on both sizes are essentially the same in principle, but the 14-in. machine has a handwheel at the side of the column for rapidly positioning the head. There is also a fine-feed hand wheel on the front of the bed by means of which the operator can bring work down to size by hand if desired. There is a ratchet and pawl attached to the latter handwheel for power feed. This is operated by the table traverse. The 22-in. grinder has both the rapid and fine-feed handwheels on the front of the bed, and has the same general feed arrangement.

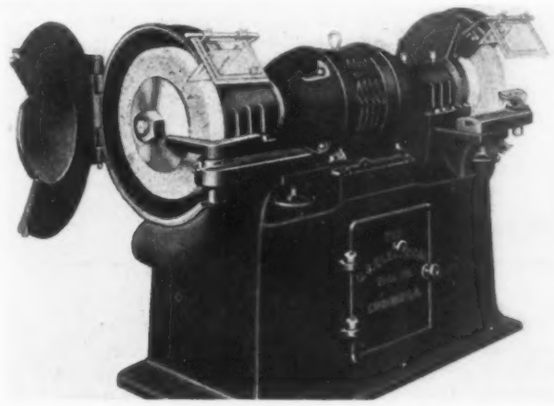
The construction of the reciprocating table follows that of the company's previous vertical surface grinder. Two table speeds are provided, the operating clutch being controlled by a handle on the front of the gear box. The hand movement of the table is controlled by a large handwheel on the front of the gear box. This handwheel may be loosened from its shaft by a convenient device so that it will not interfere with the operator when the machine is running.

Cooling solution is pumped through the hollow spindle to the wheel and is thrown between the face of the wheel and the work. A supply of solution is also conveyed to the outside of the wheel through an adjustable pipe.

Both sizes of model B grinders are suitable for either rotary or rectangular chucks and complete chuck equipment, either plain or magnetic, is available. The net weight of the 14-in. grinder is 8990 lb. without the motor, and the 22-in. machine weighs 16,500 and 19,250 lb. net for the 4-ft. and 7ft. machine respectively, without motors.

Grinding Machine for Heavy-Duty Service

A heavy-duty four ball bearing grinder designed for continuous production service and available in six sizes, from 18 in. x 3 in. to 30 in. x 5 in., is being placed on the market by the United States Electrical Tool Co., Cincinnati. The machine, the general construction of which may be noted from the accompanying illustration, can be furnished for 220, 440, 550 volts, 2 or 3 phase, 25, 40, 50 and 60 cycles, alternating current; also, for 110 and 220 volts, direct current.



The Spindle Is of Nickel Steel and Is Mounted in Four Heavy-Duty Type Ball Bearings

The motors are 40 deg. C. rating, with momentary overload capacity of more than 100 per cent. The spindle is of nickel steel, is in one piece, and is mounted in four heavy-duty ball bearings, which are enclosed in dust-proof boxes. All alternating-current grinders are equipped with remote control to assure motor protection under all conditions. The control is located in the base of the machine and has overload cut-out and no voltage release. The push button station is on the motor frame. The direct-current machines are regularly equipped with manually operated starters and fused switch, but remote control can be furnished.

The wheel guards are equipped with exhaust connections, hinged doors, spark breakers and adjustable, unbreakable glass eyed shields. The tool rests are rigid and are arranged for convenient adjustment. The grinding wheel spindle is provided with a positive shaft locking device for holding the shaft while renewing wheels. The 18 in. x 3 in. a.c. grinder carries a 5-hp. motor, operates at a no-load speed of 1120 r.p.m., and weighs 1705 lb. net. The spindle is 66 in. long, overall, and is 2 in. in diameter between the flanges. The height from the floor to the center of the spindle is 33 in. and the size of the base of the machine at the bottom is 26 x 53 in. The 30-in. x 5-in. a.c. grinder carries a 15-hp. motor and operates at a no-load speed of 680 r.p.m. The length of the spindle is 70 in. and the diameter of the spindle between flanges is 3 in. The net weight is 3300 lb.

Milling Attachment for Whitcomb Portable Shaper

An attachment for use with the Whitcomb-Damerell combination shaper and milling machine, and adapted for milling the clearance for the cutting tool when using the shaper to replane the pockets for uprights on steam and drop hammer bases, has been brought out by the Reed-Prentice Co., Worcester. It is claimed to be sufficiently rigid to permit taking cuts ⅛ in. deep.

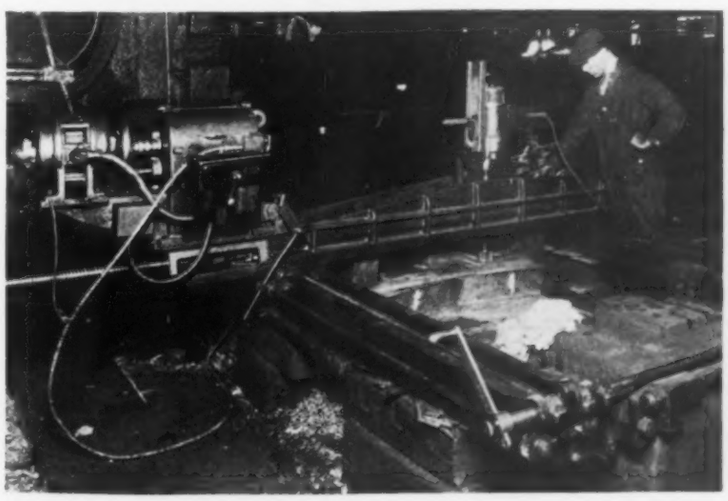
The attachment is driven by a standard electric drill of 1¼-in. capacity, operating at 180 r.p.m. The attachment was be furnished with the electric equipment illustrated or can be adapted to accommodate drills that users may have.

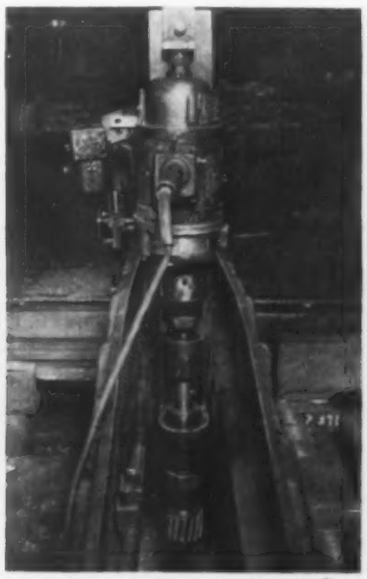
The machine on which the milling attachment is used is shown in the second illustration herewith. It is a portable draw-cut shaper, and although designed for planing ram and sow blocks, new seats for hammer uprights and for squaring the base of hammers, it is adapted also for machining other heavy castings. Two sizes are available, one for surfaces 48-in. square and the other for surfaces 66-in. square.

The tool is carried on a clapper box mounted on the front of the head, and is adjusted vertically by means of a screw controlled by a handle at the top of the head. The head slides in ways on the inside of the bridge and the reciprocating movement is controlled by a driving screw. The head is also arranged so that it can be swung each side of the vertical center line and the clapper box is designed so that the tool may be held with the cutting edge either up or down.

The bridge is of heavy angle cross section ribbed at short intervals, and supported at each end by a sad-

Whitcomb-Damerell Combination Shaper and Milling Machine. The attachment, shown at the right, is adapted for milling the clearance for the cutting tool when the shaper is used to re-plane the pockets for uprights on steam and drop hammer bases





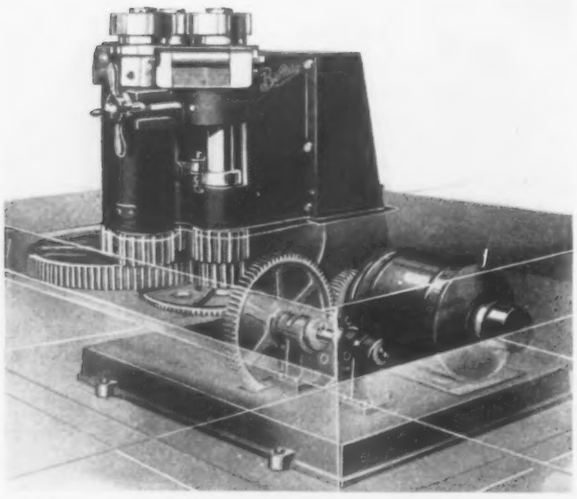
dle scraped to rails. It operates through long screws controlled by a crank handle at one end of the rail. The screw that reciprocates the head is operated by a nut which is driven through a train of gears by a motor located at the end of the gear box. Inside and extending the entire length of the bridge is a reverse rod, which carries two tripping dogs, set for the cutting stroke desired. When the head has reached the end of its cutting stroke, a projection on the head comes in contact with one of these dogs and draws a cam forward, and in so doing, engages a friction spool with the reversing friction through a bell crank. After the head has been returned the length of the stroke, it engages with one of the tripping dogs, and forces a lever in contact with the lower end of a bell crank, so that it engages the friction spool with the driving friction. The reversing of the head takes place instantaneously through the operation of a spring, located in a swivel bracket. The shipper bell crank is also arranged, with a hand lever that allows the shifter mechanism to be operated by hand when desired. This control is sensitive and will stop and reverse within ⅛ in. of the desired point, which permits the tool to cut close to corners or shoulders.

The rails are clamped to the base of the hammer by special clamping dogs with hardened edges that adapt themselves to irregular surfaces. Tie rods are provided to take the clamping strain. Fastened to the side of the rail and attached to the clamping dogs, is a wedge-shaped adjustment that permits the rails to be set parallel with each other after the clamping dogs have been properly set. This wedge adjustment is also equipped with screw for raising and lowering each end of the rail, and with this combination of adjustments, the rails may be conveniently set level and parallel with each other.

The machine is arranged to give a cutting stroke of 20 ft. per min., and a return stroke of 40 ft. per min., while eight horizontal feeds ranging from 0.010 to 0.080 in. may be obtained. The feeds are adjusted by means of a crank on the side of the head. The driving motor is of 3 hp.

Bending Machine with Vertical Rolls

The accompanying illustration shows a bending roll recently built by the Buffalo Forge Co., Buffalo, for the General Electric Co. The latter company plans to use the machine on one job only, bending flat bars on edge, in various diameters, but the same rolls that are used



The Vertical Arrangement of the Bending Rolls Permits Placing All Gearing Out of the Way. Adjustment of the rolls is by means of the capstan wheel at the front of the machine

on other benders made by the Buffalo company can be furnished for the new machine.

The rolls of the machine, which is designated as the No. 1 horizontal bending roll, are arranged vertically so that the material to be bent is in a horizontal plane. The machine is mounted on a cast iron base plate at the bottom of a pit 16½ in. deep, 73 in. long by 64-in. wide. Ten-inch channel irons placed on the floor, support a ⅜-in. checkered steel plate which surrounds the machine. This makes the checkered plate, or machine platform, 10 in. above the floor line, while the rolls proper are 36 in. above the floor line.

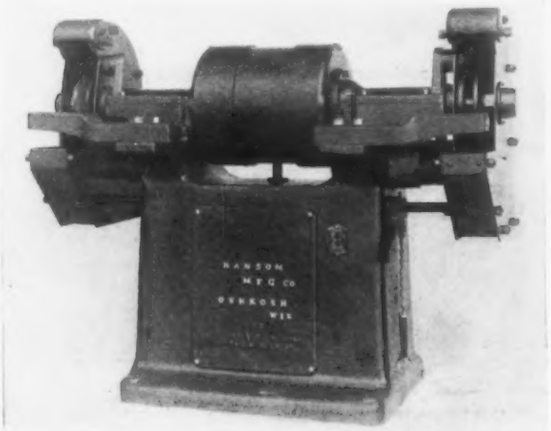
By using additional rolls, it is possible to bend angles, leg in or out; tees, leg out; squares, across flats or corners; round or twisted bars, flats, across or edgewise; rails; copper tubes, No. 12 or 16 gage, standard, heavy and extra-heavy steel pipe; I-beams, on web or flanges; and channels, flange-in or out. It is claimed that in testing the machine before shipment 2 in. x ⅝ in. flats were bent edgewise into circles, the inside diameter of which were 13½ in. From this small circle to any desired diameter, the maximum adjustment of the rolls is only 1¾ in. This adjustment is made by means of a capstan lever wheel at the front of the machine, and may be conveniently and quickly made by one man.

The vertical arrangement of the rolls permits, among other changes, placing all gearing out of the way. The drive is by a 10-hp. reversing motor, having a pinion keyed to motor shaft and driving a gear on the main drive shaft of the machine. The use of a reversing motor is stressed as eliminating pulleys, and doing away with slipping of the clutch. The heavy counterweight used on the vertical rolls has been removed and a coil spring used instead. The motor and main drive shaft bearings are of ring-oiling type, all other parts of the machine being fitted with Alemite connections. The hollow upright column at the back of the machine has shelves for storing additional rolls.

Grinder with Variable-Speed Motor Drive

The Ransom Mfg. Co., Oshkosh, Wis., is placing on the market the motor-driven grinding machine here illustrated, which was designed originally for use in a large automobile manufacturing plant, but which is adapted for use as well in other industries.

The machine is equipped with a Westinghouse direct-current variable-speed motor, the speed of which can be raised 75 per cent above normal, to permit of maintaining a constant periphery speed until the wheel is practically worn to the flanges. This makes possible a constant rate of production. The grinding wheels are 20 in. x 2 in. in size and are provided guards of steel plate, riveted. The machine has removable sleeve



The Speed of the Motor Can Be Raised 75 Per Cent Above Normal. This permits constant peripheral speed until wheel is worn to flange

bearings made of lumen metal, and the bearings are ring oiling.

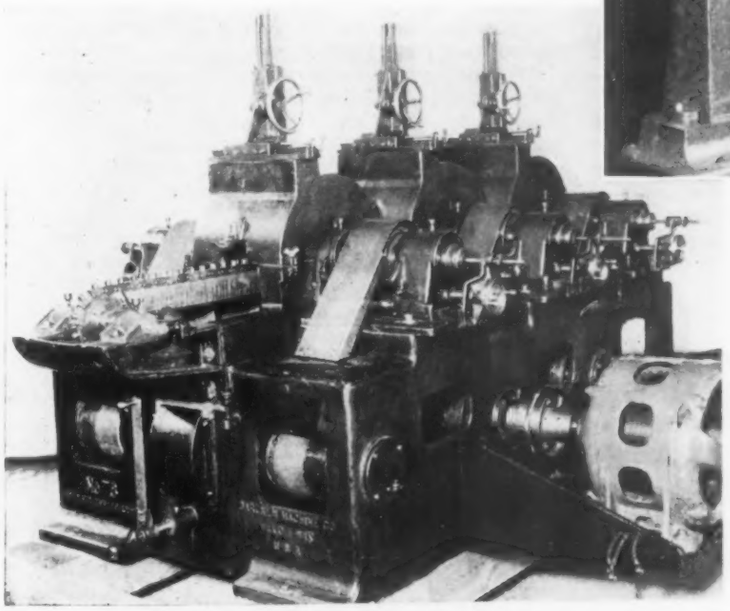
The motor is arranged so that there is enough ventilation to avoid excessive heating. An automatic accelerating starter is provided for the motor, this starter being controlled by a push button. The weight of the machine is 2000 lb.

Special Disk Grinder for Spark Plug Shells and Similar Parts

A special disk grinder designed by the Gardner Machine Co., 412 East Gardner Street, Beloit, Wis., primarily for grinding the hexagonal sides of spark plug shells, is said to be capable of grinding 7000 of these shells in one hour. The machine is semi-automatic, and two operators load it. It is said to be adapted also to the grinding of hexagon nuts and other similar parts.

The machine, designated as the No. 78 Triplex, carries three pairs of grinding members set immediately behind each other, as shown in the accompanying illustration. These grinding members consist of 20 in. diameter steel disk wheels faced with heavy-type disks. An endless chain equipped with numerous studs to fit the bore of the parts to be ground brings the work between the grinding wheels. The spark plug shells are placed on these studs by hand, and they are automatically set in the proper position for the first grinding operation. After they pass out from between the first pair of wheels, they are indexed automatically one-third of a revolution, which represents the next two faces to the second pair of wheels. This operation is repeated before the shells enter the third pair of wheels, where the grinding is completed. Following the final grinding, they are automatically unloaded into a container at the rear of the machine.

The chain carrying the shells is driven from a jack shaft, located in the base of the machine, through a worm gear reduction to secure proper rate of feed, and is conveniently controlled through a friction clutch operated by the hand lever shown at the front. Variation in the rate of feed is provided for. Each of the six spindles of the grinder has underbelt drive. The initial drive is by means of a 40-hp. motor, direct-connected by means of flexible coupling to the main drive shaft. All spindles and drive shaft are carried on ball bearings. A dressing device is built into each hood and micrometer stop screws provide close adjustment for wheel wear.



Disk Grinder (at Left) Arranged for Grinding the Hexagonal Sides of Spark Plug Shells. Two men load the machine, which has three grinding members. The production is 7000 shells an hour

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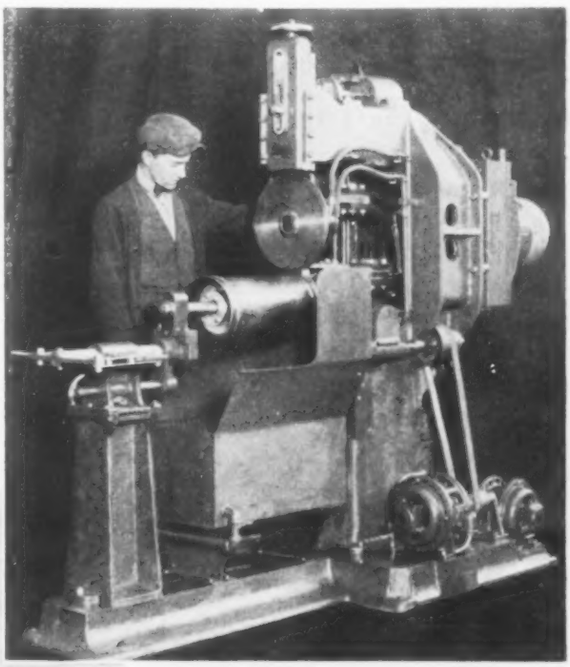
The industrial machinery market of Peru is the subject of a special report to the United States Department of Commerce, from H. Bentley MacKenzie, at Lima, Peru, commercial attaché. The United States has maintained a leading position as a supplier of machinery for that country, according to the report, which goes into considerable detail regarding the industrial developments in Peru of interest to American machinery manufacturers.

Automatic Resistance Welders for Straight and Circular Seams

Two automatic resistance welding machines, one for straight seam work and the other for circular seams, have been placed on the market by the General Electric Co., Schenectady. One of the latter type machines, used by the Solar-Sturgess Co., Chicago, for welding the circular seams of ice cream cans, is here illustrated.

The machines are made up of a framework for holding the work, a transformer for supplying current to the electrodes, movable electrode wheels and necessary control. They were designed particularly for welding the seams of light metal containers such as ice cream cans, drums, etc., and are suitable only for making lap joints with relatively thin metal. Among the advantages are the absence of fumes and open arcs, making the use of masks unnecessary, and the fact that the operator requires no special welding training. The welding speed obtained varies approximately from 20 in. per min. to 100 in. per min., depending on the nature and thickness of the material to be welded. Material up to a total thickness of ¼ in. may be accommodated.



Automatic Resistance Welder (Above) Arranged for Welding Circular Seams of Ice Cream Cans

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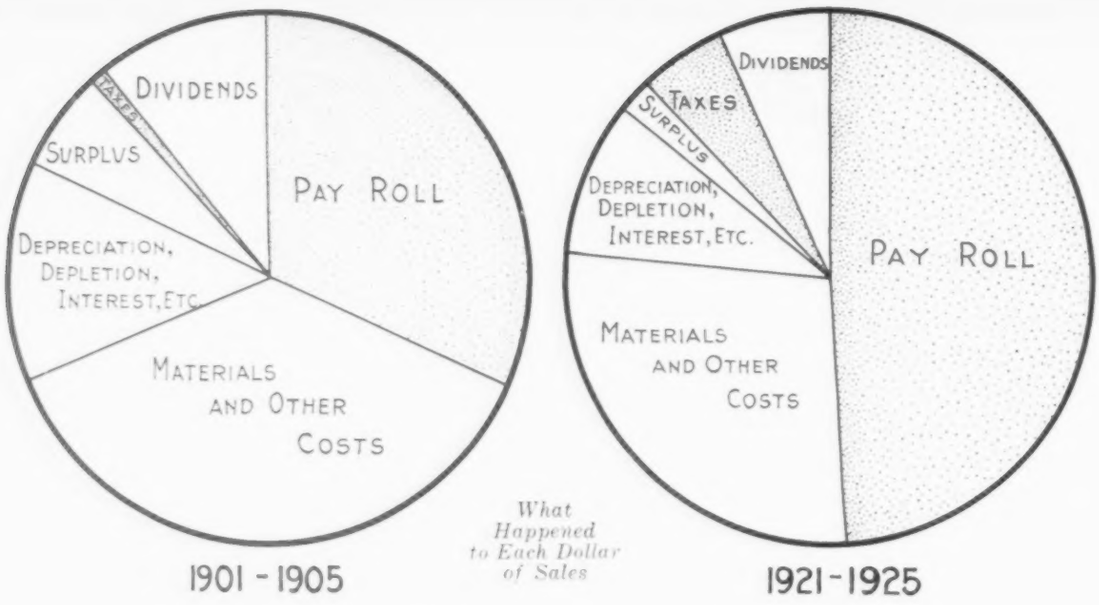
Revolving distributors will be provided for the new blast furnace of the Weirton Steel Co., Weirton, W. Va., and for the Midland Coke & Iron Corporation, Granite City, Ill., by Arthur G. McKee & Co., engineers and contractors, Cleveland.



A Quarter-Century of Progress

Steel Corporation Rounds Out 25 Years with Annual Payroll Five Times and Taxes 25 Times Those of First Year

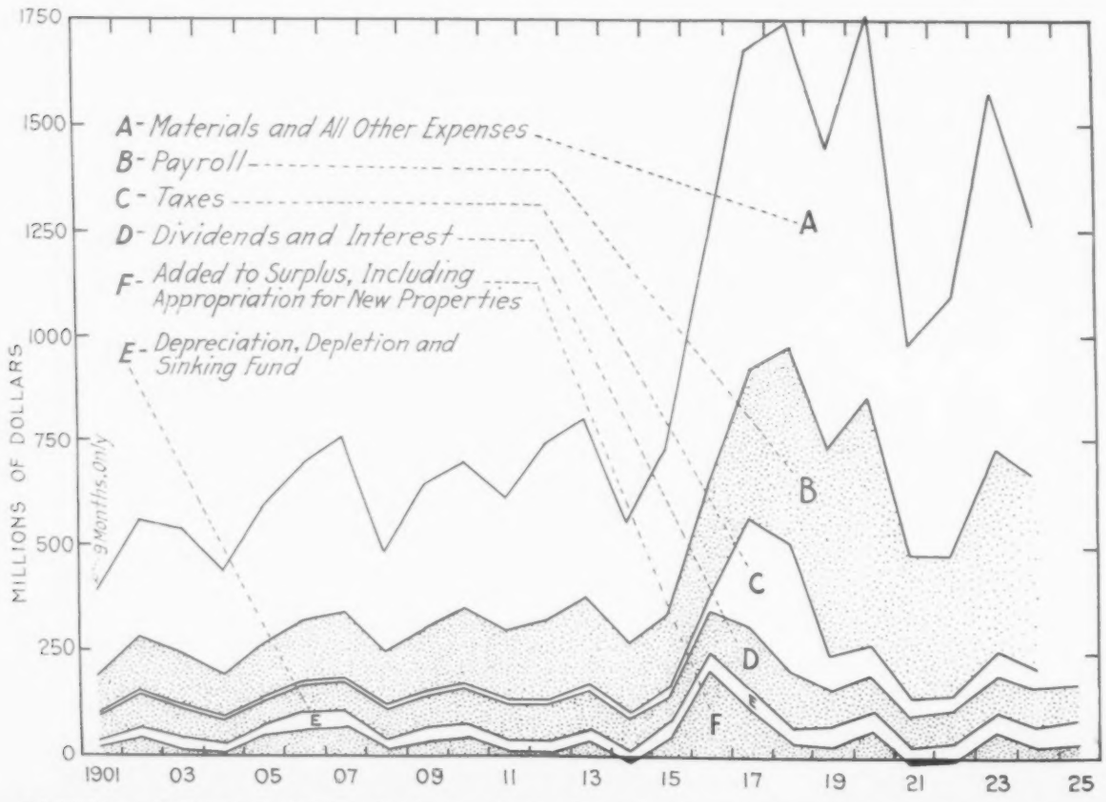
ALTHOUGH officially the operations of the United States Steel Corporation began April 1, 1901, the corporation came into formal existence on Feb. 25 of that year. It is pertinent to make a quick survey of the operations of the largest industrial entity in the world, over the first quarter-century of its history.

Three diagrams on this page present a picture of some of the outstanding changes which have taken place. The two circular charts show the division of the sales income of the corporation in its first five years of existence and in the latest five years. It will be noted that payroll has been taking recently practically half the entire amount received from sales of products, whereas earlier it accounted for less than one-third.

Taxes have gone up from ¾ per cent to nearly 5½ per cent, while the proportion paid out in dividends has declined from about 11 per cent to 7 per cent.

The diagram at the bottom of the page is a history, year by year, of the disposition of these principal items. Figures for 1925 are available only in part, as the annual report for 1925 is not yet available.

Amounts "plowed back" into the business, in the form of appropriations for new plants or new construction on the one hand and of direct additions to surplus on the other, have shown wide variations. In 1914, 1921 and 1922 there was actually a deficit.



Disposition, Through a Quarter-Century, of the Gross Receipts of the United States Steel Corporation. The steady augmentation of payroll and of taxes may be compared with the virtual uniformity of payments to capital in dividends and interest

In This Issue

Enormous undeveloped market for iron and steel in residential construction.—Industry today gets but small part of $2,500,000,000 spent annually in building houses.—Page 613.

Urge purchasers to put estimated weights of castings on blueprints sent for quotation.—Malleable Castings Association figures each foundry spends on average 12 hr. daily in needless weight estimation under present system.—Page 631.

Suggests reason for prevalence of Pilger process of seamless tube production abroad lies in inferior quality of German tube steel.—New type of water and gas pipe, wound with tarred burlap, one of by-products of Pilger system.—Page 619.

No reason why foundry should not specify sand with definite range of permeability, bonding strength, dye absorption and texture.—Dr. H. Ries predicts that such specifications will find wider use; now successfully employed by some foundries.—Page 621.

Cast iron bungalow built at Glasgow made of 5/16 in. plates.—Some steel trusses used for roof; claims for long life.—Page 622.

Steel Corporation payrolls five times larger than 25 years ago; taxes 25 times larger.—Tremendous strides in largest industrial corporation since formation quarter-century ago.—Page 628.

Exports increase in January; imports show small decline.—Export total for last seven months 11 per cent above corresponding period year ago; imports gain 60 per cent in same period, mostly due to pig iron.—Page 665.

Would sales managers of steel companies render best service to stockholders by curbing sales effort when industry is overoperating?—Attempt of mills to secure business in excess of consuming demand may lead to bad sales situation.—Page 636.

Taxpayers might well protest use of foreign steel in public buildings.—Spending large sums of public money abroad does not help wages or employment here.—Page 637.

Sales of foundry equipment gain one-fourth in 1925 as compared with 1924.—Association records show gain of 35 per cent in January sales as against January, 1924. Page 635.

American Zinc Institute tries to abolish term "spelter" and substitute "slab zinc."—But many metallurgists disagree; no exact definitions for most of metal alloys; names for binary compounds, e. g., aluminum-bronze, clumsy and inexact.—Page 636.

Increased hardness of iron-molybdenum compounds, due to molybdenum in solid solution.—Dr. Zay Jeffries comments at length on W. P. Sykes's recent paper.—Page 632.

Three-sided chill process for making chilled bronze gears improves physical properties of metal about 20 per cent, is claim.—As compared with blanks chilled only on face or periphery.—Page 616.

Production of malleable castings in January 14 per cent over previous year.—Plants now operating at better than 68 per cent capacity.—Page 634.

Seven weeks supply of bituminous and anthracite coal now on hand.—Industrial consumption showed a slight gain during January.—Page 639.

Corporation income tax advanced to 13 per cent on taxes paid this year.—Rate will be 13½ per cent on corporate incomes after this year.—Page 639.

February pig iron output declines 2.4 per cent from January.—Daily rate falls off 2566 tons; net gain of 2 in active furnaces.—Page 640.

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Two Ways of Getting Business

THERE are two ways to increase sales volume. One is to take business away from a competitor; the other is to build new markets and reap the proportionate rewards. The leading article in this week's issue of THE IRON AGE points out the possibilities which may await the steel industry in the development of one new market—steel for residential construction. Some headway has been made abroad and a great deal of little-known experimental work has been done on steel for houses in this country. Are these facts signposts on the road to a vast new market?

For News Summary See Reverse Side

Putting Casting Weights on Blueprints

Savings of $5,000,000 by Eliminating Duplicate Work—Committee Formed to Prosecute the Idea

WASHINGTON, March 1.—Adoption of the practice of indicating the estimated weight of castings on blueprints sent to foundries for estimate was the outstanding subject considered here last Thursday at a meeting held under the auspices of the National Committee on the Utilization of Metals, Department of Commerce, presided over by W. Chattin Wetherill, chairman. Through a nominating committee selected at the conference a report was submitted and adopted, providing that the associations representing the malleable, gray iron, steel and brass foundry industries be requested by the Department of Commerce to appoint each a representative on an executive committee. This committee is to be representative of the groups in the foundry industry, including consumers, distributers and producers, for the purpose of initiating a program and adopting measures designed to eliminate avoidable waste in the industry.

It was provided in the report that initial emphasis be placed on "the wasteful practice of submitting blueprints to foundries without first indicating the weight of the castings thereon." It was urged in the report that the committee be invited by the chairman of the conference to meet at the earliest possible date, and it voted also that the committee should report at the Detroit convention of the American Foundrymen's Association in September.

The nominating committee consisted of William H. Barr, National Founders' Association, Chicago; Robert E. Belt, American Malleable Castings Association, Cleveland, and Fred G. Wolff, American Car & Foundry Co., New York. The personnel of the executive committee which the committee suggested should be appointed to prepare the program consists of the following:

Richard H. Aishton, president American Railway Executives, Washington;

Charles Clifton, president Automobile Association of America, care Pierce Arrow Motor Car Co., Buffalo;

Frank Nixon, secretary American Railway Association, Philadelphia;

A. G. Hopcraft, president National Association of Purchasing Agents, New York;

William H. Barr, chairman, president National Founders' Association, 828 Walbridge Building, Chicago;

Thomas E. Durban, Erie City Iron Works, Erie, Pa.;

John J. McBride, engineer of construction, American Car & Foundry Co., 30 Church Street, New York.

Members to be selected: By American Foundrymen's Association, A. B. Root, president Hunt Spiller Mfg. Co., Boston; by Steel Founders' Society of America, J. P. Allen, president Union Steel Castings Co., Pittsburgh; by American Malleable Castings Association, Frank J. Eppelle, president, Trenton, N. J.

While there were different views expressed as to indicating weights of castings on blueprints, as between producers and users, the sense of the conference was that this policy, if generally adopted, would result in a saving. In a report W. J. Corbett, of the Steel Founders' Society of America, endeavored to explain that the logical person to make the estimate of a casting is the draftsman making the drawing for the blueprint, because of his ability to interpret every line of the drawing. It was stated that many foundries do not have staffs qualified to estimate the weight, from a drawing, with any degree of accuracy. This, it was stated, results in each foundry frequently giving different weights, often varying in excess of 100 per cent. The time required for the work and the duplication of effort also were pointed out.

Great Variations in Weight Estimates

As the result of a "weight guessing" contest conducted by the American Foundrymen's Association, it was found that, out of 997 estimates, only three approximated the actual weight of 109 lb. The variation in the individual estimates ranged from 24½ to 765 lb., as pointed out in a paper read by A. J. B. Harris, of the Ajax Metal Co., representing the association. Mr. Harris said that too much is now left to chance and that quotations often are submitted that cause losses to foundrymen. He stated that, when starting with incorrect estimates, it becomes evident that the remainder of the estimate covering operating costs will be wrong, presaging misleading costs and prices.

In illustrating a case, Mr. Harris showed that, with the great differences in weights, the prices submitted will be unsound and faulty in that the highest weights, all other conditions being the same, give a lower per pound cost but higher casting cost, and that the lowest weight gives a higher pound cost and a low casting cost. Mr. Harris said that incorporating the weight on the blueprint, where it belongs, will minimize the inaccuracy in weights and therefore result in a standard which will provide economical goods, insuring more representative prices to the producer and reflecting closer competition, and eliminating the present enormous duplication of effort.

$5,000,000 Saving Envisaged

Mr. Belt, speaking for the American Malleable Castings Association, estimated the saving translated into man power, and thence into dollars, at $5,000,000 a year. It was the theory that about 12 hr. is spent each day in each foundry, by the engineers or superintendents, in estimating weights.

W. N. Crafts, Reading Steel Casting Co., Reading, Pa., said his company favors the proposed program but declared it should provide some "method whereby the purchasing agent shall be made honest in his dealings." He asserted that the purchasing agent should give the blueprints the comprehensive information obtained from experience. It is conceded that there are dishonest purchasing agents and dishonest foundry managers, but the dishonesty may be unintentional, due to erroneous calculations or mistakes.

He said there is an element in making steel castings that does not enter into gray iron or malleable castings, reference being made to the greater amount of shrinkage. Sometimes the casting, due to the weld of the mold, will become heavier than the estimated weight. Shrinkage was declared to be variable and frequently, it was declared, castings are demanded which cannot be shrunk solid, something which happens freely in valves and fittings. Another item mentioned was the density of steel. An extremely hot steel made in the open-hearth, it was stated, is more likely to be lighter for the same pattern than cold steel made in the open-hearth. The same variation was said to exist in electric steel.

Cooperation of Commerce Department

In opening the conference, Mr. Wetherill said that, while the adoption of the practice of having purchasing agents through their engineers show weights of castings on blueprints was of itself relatively unimportant, yet the possibility of eliminating the duplication of calculation, which the present general practice entails, has immeasurable potentialities in the benefits to be derived from the proposed program. He impressed upon the conference that the Department of Commerce, under Mr. Hoover, is not attempting to regulate business but that it is its purpose to act as a neutral agent, in aiding to develop programs of waste elimination, that will be mutually advantageous, and to perform services that will be useful to industry. Mr. Wetherill said that the work in waste elimination in the metal industry covers such a large area that its allocation to one central committee, the National Committee on Utilization of Metals, had become necessary.

Secretary Hoover, in welcoming the members of the

conference, pointed out that the meetings were called only when people in the industry ask for them. He said there have been about 900 such groups in Washington during the past five years and that almost all have been successful in the work, which is in the nature of voluntary agreements. Such conferences, it was declared, have avoided much legislation, and have helped the United States to compete with foreign countries and at the same time to maintain a high standard of living and wages.

Why Steel and Alloys Become Hard

Relation of the Iron-Tungsten and Iron-Molybdenum System to the Slip-Interference Theory of Hardness

DISCUSSING the paper on "The Iron-Tungsten System," delivered Feb. 16 at the convention of the American Institute of Mining and Metallurgical Engineers in New York by W. P. Sykes, (THE IRON AGE, Feb. 25, page 550), Dr. Zay Jeffries, Cleveland, made a contribution that is here printed in full, as follows:

This work of Sykes, I believe, constitutes the beginning of a new art which will include the hardening of carbonless iron alloys and the heat treatment of iron alloys in which gamma iron plays no rôle. Already this work has resulted in the production of an alloy, which has superior red hardness to high-speed steel.

The paper reflects the careful work of the author in the determination of the solidus and liquidus lines but, what is more important, the changes in the solid state have been carefully determined and incorporated in the diagram. There are a number of points in this paper which could be discussed with profit, but I should like to point out in particular the relation of some of Sykes' work to the quantitative estimation of some of the factors which increase hardness by slip-interference.

For convenience I shall refer to some of the results of Sykes on the carbon-free iron-molybdenum alloys, described by me on Dec. 3, 1925, in the first Robert Henry Thurston lecture at the annual meeting of the American Society of Mechanical Engineers in New York. A carbon-free alloy containing 78 per cent of iron and 22 per cent of molybdenum by weight, when quenched from a high temperature, was found to be a solid solution with a hardness of 214 Brinell. On heating to 600 to 650 deg. C. for an extended period, the hardness was increased to about 530 Brinell. One great value in the study of these alloys from the theoretical standpoint is that there is no allotropic change in the iron. We can thus follow the hardness changes, due to certain structural changes, without the complication of an allotropic change or any change in grain size.

The Iron-Molybdenum Alloys

The Brinell hardness of the nearly pure, coarse-grained iron with which Sykes worked is in the neighborhood of 70. It has been found that the increased hardness, due to molybdenum in solid solution, is nearly proportional to the atoms per cent of molybdenum. This is true whether the iron is under-saturated or super-saturated. (R. S.) Archer has made similar observations on the effect of copper in solid solution in aluminum. The increase in hardness of iron produced by adding 14 atoms per cent of molybdenum in solid solution was in one instance between 140 and 150 points Brinell. The further increase in hardness of this solid solution, produced by causing the association of some of the molybdenum with some of the iron to form many highly dispersed particles of compound, was in one instance about 315 points Brinell. To provide the atoms to form a compound, however, the iron-molybdenum solid solution becomes less concentrated in molybdenum.

In the hardened alloy it seems that the solid solution contains not more than six atoms per cent of molybdenum. The hardness of the iron-molybdenum alloy containing about 6 atoms per cent molybdenum, is 130 Brinell. In the final hardened alloy, with a Brinell hardness number of 530, the iron without change in grain size or without allotropic modification, has been increased in hardness from 70 to 530. Of this increase of 460 points Brinell, about 60 points are attributed to the molybdenum in solid solution and 400 points to the high dispersion of hard particles of the iron-molybdenum compound.

Hardness of Aluminum Alloys

Similar quantitative estimates on aluminum alloys have been made by Archer and myself with results of the same order of magnitude as to the part played by solid solutions and by the presence of highly dispersed particles of compound. (R. S.) Dean and his associates have provided the basis for such calculations in the lead-antimony alloys and it can readily be calculated from their results that the lead-antimony alloys in their hardest condition owe their high hardness chiefly to finely dispersed particles of antimony rather than to the solid solution of antimony in lead.

Mr. Archer and I had these considerations with respect to aluminum before us when we attributed the chief cause of hardness of freshly hardened steel to grain refinement rather than to a solid solution of carbon in iron. The evidence is overwhelming that, in freshly formed martensite, most of the carbon is atomically dispersed and the fact is clear that such material is very hard. The precipitation of the carbide in highly dispersed particles should ordinarily produce a marked increase in hardness, but in martensite the increase is only slight. This fact leads to the conclusion that slip resistance factors are present before the carbide precipitation, sufficient to develop nearly the maximum cohesion of the iron.

Hardness of Martensite

The evidence was fairly strong a few years ago, and is still stronger today, that this hardness of freshly formed martensite is not due chiefly to the fact that the carbon is in solid solution in the iron. One way of developing high resistance to slip is by grain refinement or the great refinement of the general structure of an alloy. The evidence is overwhelming that the grain size of the body centered crystals of iron in martensite is extremely small. The final conclusion is that the great hardness of freshly formed martensite is due primarily to grain refinement.

The additional evidence, that a coarse-grained solid solution of carbon in body centered crystals of iron, cannot account for the hardness of martensite, is provided by (E. C.) Bain who preserved solid solutions of carbon in course grained crystals of body-centered cubic iron-chromium alloys and by Sykes who has done the same in the iron-tungsten and iron-molybdenum alloys. The latter solid solutions are hardened by the carbon only to an extent comparable with the effect of carbon on gamma iron which is not nearly sufficient to account for the high hardness of freshly formed martensite.

It is therefore apparent that these researches, aside from other value, throw much light on the whole problem of the hardening and hardness of steel.

The American Supply and Machinery Manufacturers Association will hold its next convention at the Hotel Statler, St. Louis, May 18, 19 and 20. There will be joint sessions with the Southern Supply and Machinery Dealers Association.

Japanese Rail Purchases

Late Buying of American Product Brings Statement from Department of Commerce

WASHINGTON, March 2.—The award of 32 miles of 91-lb. rails, approximating 6000 tons, to an American mill for the Hanshin Electric Railroad in Japan was observed with keen interest by the Bureau of Foreign and Domestic Commerce, Department of Commerce. Director Julius Klein, in a statement issued today, commented on the fact that the business came to American mills "in the face of the keenest European competition, supported by some publicity promoted abroad to discredit United States steel products." Dr. Klein pointed out that the contract went to one of the large Japanese importing firms on the basis of furnishing American open-hearth rails, according to A. S. T. M. specifications. The statement of Dr. Klein continues:

"The ability of the American manufacturer to make complete delivery within the time limit is also understood to have influenced the awarding of the contract. Due to American manufacturing facilities, makers in this country can make delivery before the promulgation of the revised higher tariff schedule.

"Further evidence of Japan's preference for American rails of open-hearth quality was shown in a recent purchase by the South Manchuria Railway of 5000 tons of 60-lb. rails. It is understood that the successful bidder was paid a premium for this tonnage because of quality and delivery.

"American rail manufacturers have supplied Japanese railroads, both government and private lines, with over 1,000,000 tons of rails since they first entered that market in 1896, the bulk of the tonnage being of open-hearth quality and design similar to the rails used in American railroad track. That tonnage represents 63 per cent of the total consumption of foreign rails by Japan for this long period.

Steel Importation Heavy

Reinforcing Bars Active—German Mill Rejects American Rail Order—Japan to Buy Rails

NEW YORK, March 2.—Purchasing of foreign steel, principally small and medium sized tonnages of reinforcing bars, continues at a high rate. Among sales recently reported to American consumers is about 600 tons of reinforcing bars sold to a user in the Boston district and another lot of about 1200 tons also sold into the New England district. It is reported that the Boston & Maine Railroad, which has been securing prices on about 16,000 tons of rails and accessories, offered the total tonnage to a New York importer representing a large German works, but recent large tonnages booked by this mill and the fact that open-hearth material was specified resulted in a refusal to accept. It is thought the order may go to another German mill.

Prices on the imported product are generally unchanged, importers offering mild steel bars of Bessemer grade on a basis of 1.70c. to 1.73c. per lb., c.i.f. duty paid. Deformed steel bars range from 1.80c. to 1.90c. per lb. base, with open-hearth quality from 1.90c. to 2.00c. per lb., base. There is apparently some progress being made toward the maintenance of moderate sized stocks of imported steel in the New York district so that small orders can be delivered promptly.

In the importation of both pig iron and steel products agents in the United States with direct connections with European producers are beginning to complain of the increasing number of small importers that have recently entered the market. This has so increased competition in the importing field as to render it difficult to maintain profitable prices, according to some of the larger companies. Pig iron sellers complain of about the same condition and the additional factor of American dealers who purchase tonnages through importers, expecting to dispose of the iron before arrival and when unable to do so often selling at cost or at a slight loss. These distress tonnages, it is pointed out by the importers serve to bear down the market on imported iron to an unprofitable level. Present stocks of iron at Philadelphia and the Army base, Boston, are pointed to in explanation of the depressing effect heavy and often speculative purchases have exercised on the importation of iron.

In the export field, the rapid rise of the Japanese yen, which it was expected would bring out considerable business delayed by the prospect of still more favorable exchange rates, has come to an end temporarily, largely as a result of the statement of the Japanese government that recent exports of gold were not for the purpose of bolstering the exchange. In the meantime, purchasing continues on a limited scale with practically no merchant inquiry in the market. In addition to the small tonnage of heavy sections of structural steel recently placed by the Imperial Government Railways with a prominent American export interest, another larger order is reported to have come to the United States from another Japanese consumer.

Bids have been opened by the Nankai Railway Co. on 25 miles of 75-lb. sections and by the Osaka Electric Tramway on 25 miles of 75-lb. sections of rails, but award is not yet announced. The Imperial Government Railways opened bids today on about 5000 tons of 100-lb rails and accessories. The 3500 tons of seamless oil well casing for the Nippon Oil Co. was placed direct with the Mannesmann Tube Co. in France.

Puddling Rate Increases for March-April Period

YOUNGSTOWN, OHIO, March 2.—At the bi-monthly examination of sales sheets today, to determine the puddling rate for March-April, the average price of bar iron shipped by Mid-Western makers for the 60-day period ended Feb. 20 was disclosed as 2c. per lb. This compares with an average of 1.95c. per lb. two months ago, and represents an advance of one point in the card rate.

Boiling rate therefore advances from $11.13 per ton to $11.38, or 25c. per ton. Finishers receive an increase of 2½ per cent in tonnage rates, to a rate 47 per cent above base.

J. W. Hughes, assistant to vice-president, Trumbull Steel Co., acted for manufacturers, owing to illness of James H. Nutt, secretary of the Western Bar Iron Association, and M. F. Tighe, of Pittsburgh, president Amalgamated Association of Iron, Steel and Tin Workers for the employees.

Examination to determine tonnage rates for sheet and tin mill workers in mills subscribing to sliding scale wage agreement will be held about March 10, at Warren, Ohio. The annual convention of the Amalgamated Association, to determine a wage program to be presented in June, at the yearly wage conference in Atlantic City with employers, starts April 6 at Pittsburgh.

Steel Construction Institute Extends Activities

The American Institute of Steel Construction announces an extension of its activities and the addition to its staff of A. T. North, member of the American Institute of Architects and until recently associate editor of *American Architect*.

Mr. North's practical experience as a structural steel fabricator was gained in the employ of the Paxton & Vierling Iron Works, Omaha, Neb.; the Snead Architectural Iron Works, Louisville, Ky., and the Stewart Iron Works, Covington, Ky. Later he served the National Fireproofing Co. (Western Division) as chief engineer. He will direct the extension of the institute's activities along two important lines: the organization of a department of architectural relations and the publication of a sales manual to further the development of better selling methods in the structural steel industry.

New York Steel Treaters' February Meeting and March Smoker

At the February meeting of the New York chapter of the American Society for Steel Treating, held Wednesday evening, Feb. 24, an address was given by E. C. Bain, research metallurgist, Union Carbide & Carbon Research Laboratories, Inc., Long Island City, N. Y., on "Metallography of the Iron-Chromium Alloys." Mr. Bain prefaced his address by some interesting general remarks on the various alloys of iron with chromium, molybdenum, tungsten, as well as silicon, vanadium, etc., explaining some of the transformations which take place at various temperatures and particularly the development of delta iron as a result of the combinations of iron and the various metals and the heat treatment applied. The main portion of the address was based upon his papers delivered before the winter sectional meeting of the Steel Treaters at Buffalo, Jan. 21 and 22 (THE IRON AGE, Jan. 28) and his paper delivered before one of the steel sessions of the American Institute of Mining and Metallurgical Engineers in New York, Feb. 16 (THE IRON AGE, Feb. 25). He also developed certain phases of the subject he had not touched upon in detail in the papers referred to.

The members of the New York chapter are looking forward with a great deal of interest to the annual smoker which will be held at the Hotel McAlpin, March 17. This will be preceded by a dinner at 6:30 and followed by a lively program, made up largely of eight vaudeville acts, one of which will be a repetition of the brief minstrel show which certain members of the New York chapter gave at the smoker held at the annual convention of the national society in Cleveland last September. The tickets are announced as $3.

For the April meeting, scheduled for April 21, the subject of "Alloy Steels in Machine Tools" will be discussed by an authoritative speaker, not yet announced, and for the May meeting the subject will be "Alloy Steels in Automobiles."

Foundrymen Announce Tentative Program for Second International Congress

The American Foundrymen's Association announces an extensive program of technical sessions for the Second International Foundrymen's Congress to be held at Detroit, Sept. 27 to Oct. 1. The sessions will cover all phases of foundry practice, metallurgical, shop and general management.

For the steel foundrymen there are scheduled sessions on steel foundry shop problems and on steel metallurgy. John Howe Hall, R. A. Bull, Bradley Stoughton and other steel foundry experts have been secured to address these. For the gray iron foundrymen there will be two special sessions pertaining to specific metallurgical and shop problems of the cast iron industry.

The non-ferrous sessions will be joint meetings of the A. F. A. and Institute of Metals Division of the A. I. M. and M. E. These sessions will be symposiums on temperature control, and casting nickel alloys, a luncheon round table discussion on brass foundry problems and a session on casting aluminum and aluminum alloys.

For the malleable foundrymen, in addition to the usual session on technical problems, there will be a luncheon round table discussion on practical shop problems.

The tentative schedule for the technical sessions is as follows:

Monday, Sept. 27
- 1.30 p. m. (1) Opening meeting. Address of welcome and responses
- 2.00 p. m. (2) Non-ferrous metals
- (3) Materials handling

Tuesday, Sept. 28
- 10.00 a. m. (4) Steel founding
- (5) Non-ferrous metals
- (6) Apprentice training
- 12.15 p. m. (7) Luncheon meeting and round table discussion of brass foundry problems
- 2.00 p. m. (8) Symposium on permanent and long life molds

Wednesday, Sept. 29
- 10.00 a. m. (9) Steel
- (10) Gray iron
- (11) Malleable
- (12) Inst. of Metals Division, A. I. M. and M. E.
- 2.00 p. m. (13) Costs
- (14) Foundry refractories

Thursday, Sept. 30
- 10.00 a. m. (15) Foundry sand control
- 12.15 p. m. (16) Malleable round table discussion and luncheon
- 1.30 p. m. (17) Business meeting
- (18) Cast iron
- (19) Management

Friday, Oct. 1
- 10.00 a. m. (20) Foundry sand

To Discuss Waste in Machine Shops

The Chicago section of the American Society of Mechanical Engineers and the mechanical section of the Western Society of Engineers will hold a joint meeting, on March 24, in the rooms of the Western Society of Engineers, Monadnock Block, Chicago. This meeting will be devoted to the symposium of waste in the machine shop.

The afternoon session will be devoted to the general subject of tool manufacture versus tool making. G. A. Pennock, technical superintendent of the Hawthorne works of the Western Electric Co., will discuss the "Division of Labor in Tool making." A second paper, entitled, "Selection of Tool Steels," will be read by J. B. Mudge. The third paper of the afternoon session will deal with "Maintenance and Upkeep." It will be discussed by George Hodge, of the industrial relation department, International Harvester Co. At the evening session Hugo Diemer, of the LaSalle Extension University, will talk on the subject of "Managerial Waste in Machine Shops." The final paper of the session will be prepared by a railway engineer on the subject of "Reclamation of Processed Material."

Large Increase in Malleable Castings Production

Production of malleable castings in 139 plants in January amounted to 75,658 tons, according to figures collected by the United States Department of Commerce. Compared with the same 139 plants in January, 1925, this shows an increase of 14 per cent from the 66,338 tons of that date. The percentage of capacity operated went up from 58.1 to 68.2. Production in January was considerably higher than in any month of 1925, the maximum having been October, with 68,122 tons or 61 per cent. Production in December was 65,766 tons, or 59 per cent of capacity.

Shipments, on the other hand, were far lower than production and formed the smallest total since September. The amount was 55,393 tons, compared with 58,890 tons in December and 59,108 tons in January a year ago. Only in July, August and September were monthly shipments in 1925 below those of the current month. Orders booked, at 65,738 tons, showed a higher total than in any month of 1925. The figure compares with 53,991 tons in December and with 61,127 tons in January, 1925.

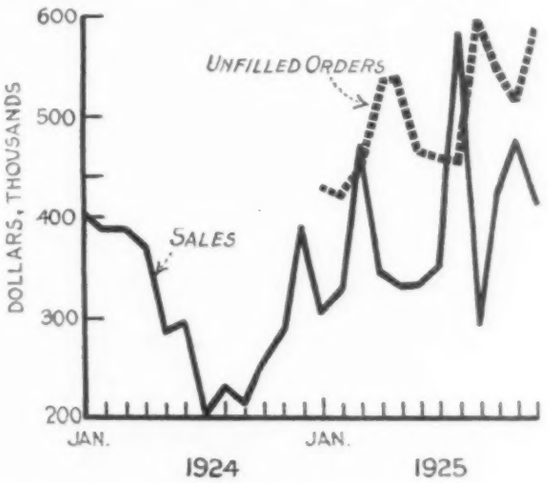
A deed filed at Uniontown, Pa., Feb. 25, discloses the Wheeling Steel Corporation as the seller of the 1000 acres of coal land bought by the Weirton Steel Co., Weirton, W. Va., and reported in The Iron Age, Jan. 28. The land adjoins the property of the Redstone Coal & Coke Co., a subsidiary of the Weirton Steel Co., at Luzerne, Pa., a short distance southwest of Brownsville, on the Monongahela River. The consideration was $1,600,000.

Foundry Equipment Sales Gain

Shipments in 1925 Also Show Increase Over 1924—Unfilled Orders Decline in January

Total sales of 11 manufacturers comprising the Foundry Equipment Manufacturers Association were 25 per cent larger in 1925 than in 1924, according to statistics released for the first time by the secretary at Cleveland. Sales for 1925 amounted to $4,665,300, as compared with $3,742,703 for 1924.

In January, 1926, 10 member companies reported sales totaling $406,221, a gain of 35 per cent over $300,828, the total for the same firms in January, 1925.



Sales of Members of Foundry Equipment Manufacturers Association Fluctuated Sharply in 1925, but Averaged Much Larger Than in the Previous Year. Unfilled orders, shown only for 1925, were much heavier at the close than at the beginning of the year

As compared with December, 1925, however, January of this year showed a loss of 2 per cent.

In shipments 1925, with a total of $4,362,794, showed a gain of 10 per cent over the previous year with a total of $3,679,961. Shipments in January, 1926, were 44 per cent larger than those in January, 1925, but 8 per cent smaller than in December, 1925.

Orders on hand on Feb. 1, 1926, were 8 per cent smaller than on Jan. 1, but 18 per cent larger than on Feb. 1, 1925.

Members of the association contributing to the report include: American Foundry Equipment Co., New York; Arcade Mfg. Co., Freeport, Ill.; Federal Malleable Co., West Allis, Wis.; Hanna Engineering Works, Chicago; National Engineering Co., Chicago; Osborn Mfg. Co., Cleveland; Pangborn Corporation, Hagerstown, Md.; W. W. Sly Co., Cleveland; Truscon Steel Co., Youngstown; Whiting Corporation, Harvey, Ill.

Sales by Months

	1926	*1925*	*Per Cent*
(10)* January	$406,221	$300,828	Gain 35
	*1925 (11)**	*1924 (11)**	
January	304,724	416,017	Loss 27
February	326,887	386,746	Loss 16
March	469,324	387,579	Gain 21
April	345,907	374,772	Loss 7
May	332,175	285,217	Gain 18
June	334,424	295,049	Gain 13
July	353,560	201,875	Gain 75
August	580,864	237,410	Gain 106
September	296,437	219,278	Gain 35
October	424,054	259,870	Gain 51
November	480,327	284,617	Gain 68
December	416,610	393,367	Gain 6
Total	$4,665,300	$3,742,703	Gain 25

*Figures indicate number of firms reporting

Shipments by Months

	1926	*1925*	*Per Cent*
(10)* January	$437,877	$301,684	Gain 44
	*1925 (11)**	*1924 (11)**	
January	305,580	315,684	Loss 5
February	277,855	345,491	Loss 19
March	348,589	389,799	Loss 10
April	325,951	430,479	Loss 24
May	407,339	335,450	Gain 21
June	318,442	287,916	Gain 10
July	352,602	276,701	Gain 27
August	388,370	284,150	Gain 36
September	351,121	233,854	Gain 50
October	400,646	252,579	Gain 58
November	414,148	203,557	Gain 103
December	472,144	324,296	Gain 45
Total	$4,362,794	$3,679,961	Gain 10

Orders on Hand by Months

1926			*Per Cent*	*As Compared with Same Month 1925, Per Cent*
Jan. 1	$550,016	Loss since December	8	Gain 27
Feb. 1	500,993	Loss since January	8	Gain 18
1925			*Per Cent*	*Per Cent*
Jan. 1	431,656	Gain since December	8	Loss 15
Feb. 1	421,918	Loss since January	2	Loss 26
March 1	446,895	Gain since February	5.5	Loss 27
April 1	539,539	Gain since March	11	Loss 10
May 1	539,232	Loss since April	0.005	Gain 5
June 1	463,431	Loss since May	14	Loss 13
July 1	460,383	Loss since June	0.066	Loss 16
Aug. 1	457,925	Loss since July	0.5	Loss 16
Sept. 1	598,143	Gain since August	30	Gain 50
Oct. 1	544,041	Loss since September	9	Gain 30
Nov. 1	518,794	Loss since October	4.75	Gain 58
Dec. 1	593,455	Gain since November	14	Gain 32

Rates from Knoxville Upheld

Commission Decides Against Application of Jones & Laughlin Scale on Bar Iron

WASHINGTON, March 2.—The Interstate Commerce Commission, reaching conclusions different from those recommended by the examiner who heard the case, handed down a decision last week holding that rates on bar iron from Knoxville, Tenn., to destinations on the Louisville & Nashville Railroad in Kentucky and Tennessee, and to Ohio and Mississippi River crossings and points in Central Freight Association territory, are not unreasonable or unduly prejudical. The commission also denied the fourth section (long-and-short haul) relief.

The complaint in this case was made by the Knoxville Iron Co., which contended that it is impossible for the company at many points to do business on the present level of rates. The company particularly stressed the relation of these rates to those from Pittsburgh. The opinion said that while the complaint disclaimed a desire for a strict distance adjustment, it stated that what it wanted was the same basis of rates as might be prescribed in the Jones & Laughlin case.

The commission pointed out that the distance schedule found in that case would have produced substantial reductions in all of the rates attacked by the Knoxville Iron Co. The opinion adds that the Jones & Laughlin scale was constructed for application entirely within Central Freight Association territory and "was designed in the light of conditions then existing and it is not shown that it is appropriate as a basis for rates from and to the points here considered."

The decision of the commission permits the carriers to make certain modifications proposed by them. The principal one concerns the Louisville & Nashville Railroad, which proposes a new adjustment grading up northbound from Knoxville so as to reach a 29c. rate at a distance of about 200 miles, which rate is blanketed the rest of the way to the Ohio River, with corresponding readjustment of branch line rates. Under this proposal the rate to Lot, Ky., would become 16c. instead of 27c. Rates under this plan had not been established because they were not satisfactory to the complainant.

The railroads have offered to reduce the rate of 37c. to Evansville, Ind., and Owensboro, Ky., and certain intermediate points to 33c., but this proposal also was not satisfactory to the complainant and had not been made effective.

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Salesmanship in Steel

NOT infrequently there has been criticism of the steel mills for what is called their lack of "salesmanship." Much of this criticism has come from mill customers who in their turn manufacture products which are sold for further use in manufacturing at prices which are subject to variations of much the same order as the variations in prices of mill products. These manufactured wares have their advances and declines and their periods of weakness or strength. There has been relatively little criticism by manufacturing consumers who produce articles for final consumption, sold at fixed prices, like automobiles, agricultural implements or machinery generally.

That the fault, if there is a fault, is not confined to the typical steel salesman is indicated by the fact that some of the critics assert that many of the cases of irregularity occur, not when the steel is sold through the ordinary channel, but when it is sold by "the man higher up." Such reference is necessarily to large tonnages.

While much of the criticism of steel selling prices is well founded, there is something to be said in palliation. The steel industry is old, but the selling of steel along present lines is relatively new. The steel market that has existed in recent years is not the steel market of the old pre-war days. Steel used to be sold at practically invariable prices for each given quarter, with certain preferences well understood in the trade but not publicly mentioned, and the common practice was for the market to get going in a "buying movement," order books being filled further and further ahead, usually at successive advances quarter by quarter, until the thing wound up by a break and a fresh start.

In the steel market of today there is almost continuous buying and selling. There are price variations, according to the desirability of an order, that did not exist in the old days. This means, to a considerable extent, a new kind of salesmanship, and the mills have no little to learn along that line.

The proneness of mills individually to seek a higher operating rate than circumstances can give the entire industry is a separate matter, although it is related to the point of the salesman failing to employ all the resources of salesmanship. This is entirely the affair of the men higher up in the organization, who may render the best service to their stockholders by curbing at times, rather than encouraging, the activities of their sales departments.

Metallurgical Nomenclature

IT was but recently that a committee of the American Iron and Steel Institute found it necessary to offer, for statistical purposes, a definition of pig iron. Metallurgical experts are not agreed that steel has yet been adequately defined.

These are not exceptional instances. In nonferrous metallurgy there are similar uncertainties. The American Zinc Institute is trying to abolish the use of the word spelter, substituting slab zinc. Zinc metallurgical experts say this cannot be done, for the term spelter is necessary for precision. Yet, perhaps, there is no satisfactory definition of spelter.

Brass and bronze are two controversial terms. It is certain that the lexicographic definitions do not apply. But what do? There is not yet technical agreement in respect to their definitions.

There is the very interesting case of the analogue of brass and bronze in which nickel takes the place of zinc and tin respectively in this series of copper alloys. It used to be called German silver, probably owing to its originating in Germany and its looking like silver. During the war, when the name of Germany was unpopular, we fell into calling this nickel-silver, but now Government bureaus and organizations fostering purity in trade are objecting that it is not silver.

Without any doubt such objection is well founded, though it may appear far-fetched. A person buying a match-box of nickel-silver is no more tricked than when he buys a lead pencil that contains no lead. However, the manufacturers of nickel-silver, who also make brass and bronze, would

welcome another name if anyone would but suggest a good one. Nickel-copper would be better than nickel-silver, but what is really needed is a one-syllable word like brass or bronze.

There is another alloy with copper as the base in which tin is replaced by aluminum. This is known as aluminum-bronze.

So long as we have to do with binary alloys the problem of nomenclature, though complex, inconsistent and unsatisfactory, is nevertheless relatively simple. When, however, we come to the alloys of three or four metals we begin to appreciate the intricacy of the maze.

Foreign Steel in Public Construction

WHILE no one can, and presumably no one does, dispute the right of an individual or private corporation to buy foreign steel or pig iron, the view is otherwise when it is a Federal, State or municipal government that is doing the buying. Some ordinances specifically forbid the use of foreign building material in civic structures.

The contrary is apparently the case in Philadelphia, where a good-sized tonnage of foreign steel bars recently was purchased for two public school buildings; also, not so long ago several thousand tons of imported steel was bought for sewer work in Brooklyn. Some public work will be built of foreign steel on the Pacific Coast. In these cases the actual purchases were consummated by private contractors, but taxpayers consider this a questionable diversion of their money just the same.

Steel companies have not openly protested against the use of foreign steel in public work, as to do so might appear inconsistent in view of their own interest in export trade. Any protest really should come from the taxpayers, who benefit little if at all when foreign labor and materials which can well be supplied here enter into such work.

Old and New Lines of Trade

THOUGHTFUL men, more anxious to arrive at the truth than to "take sides" and defend the side selected, confess they are somewhat puzzled by the divergent views expressed on the present state of trade in general and the prospects. On the one hand opinions are broadcast that business rests upon a very substantial foundation, with predictions here and there that business is likely to grow better. On the other hand, it is pointed out, though not so likely to be broadcast, that there are some menacing conditions. When there is complaint, as there is, that certain well-established and efficiently conducted lines of industry are not so prosperous as would be expected, considering the general activity of trade, that is really a commentary that basic conditions are not so good as one would like to have them.

As to this divergence of view, some light may be thrown by segregating our present activities, industrial or commercial, and financial, into two classes, to be called for convenience the old and the new. Drawing such a line, there may be some surprise at the way in which our activities fall.

Among old and well-established lines of industry must be placed that of producing steel. It is very efficiently conducted, yet as pointed out in this department of THE IRON AGE, Feb. 4, steel is not selling at prices that would offer the least inducement to any one to build a steel plant as a new undertaking, for it would not pay anything like a fair return on the investment. There is a large demand for steel and the steel is paid for very promptly.

In the other class one may readily select the automobile industry. Its profit percentage is large, its trade is by no means steady and when the dangers of instalment credit are spoken of, as they often are, the automobile is more commonly in mind than anything else.

In another line of activity, building, a corresponding division may be made. There is much building of dwelling houses, apartments and hotels and much of this investment will readily be classed as safe and sound. On the other side there may be mentioned the building activity in Florida, which may be going too far, or be premature, which is virtually the same thing.

Then, in a third line of activity, we have the widespread investment by ordinary people in shares and bonds of well-established corporations, including public service corporations, which may be called sound and secure. On the other side is the absorption of billions of dollars of foreign securities, about which there is much question. These securities may or may not be digestible. At any rate they are not as yet digested, and there are serious doubts whether international exchange, which will have to depend upon merchandise movements, will take care of interest payments, while principal payments seem practically out of the question.

Here we have three categories, manufacturing, building and investing. Nearly everything that is sound but not particularly prosperous is old; nearly everything that seems very profitable but is pointed out as possibly unsafe, is new.

American "Profits" from the War

ECONOMIC history that may be written a century hence may be expected to indorse the conclusions of a few economists of the present day that the American people did not gain in wealth out of the Great War. Doubtless the generation now living in Europe will die with a belief to the contrary, and nothing will be effective in changing that belief. Plainly the thing is rankling in the minds of our national debtors, especially the French, from whom we have asked payment.

The National City Bank, in its February letter, reverted to the subject on the inspiration of a communication it had received from a French correspondent. George E. Roberts, who writes this highly esteemed bank letter, has dealt with the subject at length. He takes very positively the same view that Dr. W. R. Ingalls elaborated

in his "Wealth and Income of the American People" in discussing the effects of the war on national production, general scale of living and thrift.

The argument in brief is that increases or decreases in national wealth must be expressed physically and must be capable of being shown by inventory. What is commonly called money does not mean anything more than an expression of credit. Apart from gold, which is accepted as the fundamental medium of exchange, wealth means merely the possession of land, buildings, mines, factories, railroads, etc., and goods of many sorts. A people that increases its possession of these physical things gains in wealth, and vice versa, a people loses in wealth if these things diminish or become impaired.

Inventories of the wealth of the American people—that of 1920 by Dr. Ingalls and one of 1922 by the Census—show that the increase in our wealth, in comparison with the pre-war data, was practically nothing. Obviously such estimates cannot be made with the precision of a bank statement, and the conclusion may range from the opinion of a certain impairment of wealth to the opinion of a small gain but much less than the normal gain would have aggregated had there been no war. There is no ground for the belief that any abnormal gain was realized at the expense of any foreign people.

It is true that in the course of the war a good many industries and a good many corporations realized great profits, but few of them were able to retain their gains. Mr. Roberts graphically pictures the disasters that overtook the meat-packing, sugar-producing and bituminous coal mining industries, and shows how over a period of years, including the war years, their profits have been very small. He might have added copper mining and other industries. The disaster to American agriculture need not be recited again.

Warfare is no way of creating wealth, or even of transferring it from one nation to another. War always means destruction of wealth; always it is a calamity. The Great War outtopped all wars in catastrophe. Every country of the world suffered from its consequences. Of the United States the most that can be said is that it did not suffer so much as the countries of Europe. But, as Mr. Roberts pertinently remarks, nobody has yet accused us of being responsible for the war and chargeable with its dire results.

Tin Prices and Substitutes

TIN is soaring to new heights. During the past week spot Straits metal sold for several days at 64.75 cents per pound, New York, a higher price than has been seen since early in 1920. It is also nearly 50 per cent above the 1913 average. Prices have been uniformly higher for months than in some years. In fact, spot Straits tin has not been under 60 cents, New York, since Sept. 30, 1925, with a 1925 average at 57.90 cents.

There are indications that the law of supply and demand is the moving factor. The world's visible supply has been declining quite rapidly of late—down 1000 tons on Feb. 1, an additional 500 tons on March 1, and the expectation of a further decrease of 2,000 tons by April 1, due to large and sustained consumption. Tin is always subject to speculative manipulation, perhaps more so than any other metal, and this is commonly a factor in price uncertainty. Only once has government influence been at all marked; this was several years ago when an export duty on tin ores operated to prevent the establishment of refineries in the United States and other countries.

There is no prospect of immediate relief to the buyers of tin. The United States is the largest consumer, and here, if anywhere, should be developed a substitute metal. Then there is the possibility that research, which certainly has every incentive, will work to reduce the amounts of tin at present regarded as essential.

The Road to White Collar Jobs

WHITE collar jobs in manufacturing are more and more being filled by way of the shop. The executive who has not had some shop training is becoming rare. White collar males in the office also are not so numerous as they were. The war brought women into offices in increasing numbers, and at the same time mechanical office methods came into larger vogue.

Small wonder then that employers look askance at the young man who declares he wants work which will not soil his hands and clothes. Even the office boy, as he gets a little older, may find his career switched from the office to the producing end of the business, probably to his everlasting good. The dwindling supply of brawn, growing relatively ever scarcer, calls for more brains. Lifting and conveying apparatus is helping to fill the void, but this has to be more and more automatic and foolproof in character, and it takes brains to conceive, install and maintain it.

Everywhere the effort, whether specifically realized or not, is to meet the evil day of a real labor shortage. No wonder able-bodied young men are advised not to strike first for the office. Today's best white collar jobs generally are reached over a rough road, but the opportunities for service and personal satisfaction are worth the trials.

How Alloy Steels Aid Transportation

The part the metallurgist has played in the development of locomotive design is graphically told in a recent publication of the Central Steel Co., Massillon, Ohio. From the days of the earliest French locomotive invention, through the first American-made "engine" in 1830 down to the powerful Southern Pacific types of today, the historical progress of the locomotive is shown in 50 excellent full-page pictures. This 64-page book points out that the demands of modern transportation could not have been met save for the improvement in quality of steel which has gone hand in hand with the advances in locomotive design.

Future locomotive development depends largely upon the ability of metallurgists to respond to the demands for better and better steel. The highly stressed and wearing parts of locomotives, such as piston rods, main and side rods, axles, crank pins, staybolts, engine bolts, springs and tubes are largely made from alloy steels today and no small part of the splendid record of locomotives on our railroads is due to the quality of such steels.

New Tax Law in Effect

Decreases in All Schedules But One—Fears of Treasury Deficit Premature—High Lights Tabulated

WASHINGTON, March 2.—Marked by comparatively little partisan debate, the tax reduction bill, passed by Congress in the record time of 81 days, has been signed by the President and most of the provisions have gone into effect. The income tax reductions will apply to payments due March 15. The measure cuts, to their lowest levels since the World War, taxes of various kinds, except the corporation income tax. The total reduction in the measure is about $388,000,000, and the number of former taxpayers has been reduced by approximately 2,350,000.

First fears of the Administration that the slashes would create a deficit have given way to confidence that an estimated surplus of $11,000,000 will result, provided there are no increases in appropriations above the sums suggested by the Bureau of the Budget. There will be a drive to hold down appropriations in such vital measures as the Army and Navy bills. The Treasury also calculates that, while the bill is expected to reduce revenues by $388,000,000 during the current calendar year, receipts during the next fiscal year will be decreased by only $319,000,000.

Only One Item Increases

The only increase in the law concerns the flat corporation income tax, which was raised from the present 12½ per cent to 13 per cent on taxes paid this year, and 13½ per cent on taxes paid hereafter. This increase was the object of much protest from business interests. Exporters have been particularly pleased with the end of the tax on foreign-earned incomes. The elimination of this provision is expected to stimulate business in connection with foreign trade, as the eliminations and reductions in other respects are expected to stimulate domestic business. The new law also eliminates the publicity provision.

The President is known to be gratified by the manner in which Congress handled the tax bill. He is understood to regard the present Congress as the most efficient national legislative body in recent years, an interesting commentary at least, even though the view may not be accepted generally by the country. At the same time, this Congress has been warmly commended by the public for its non-partisan handling of the tax bill.

The high lights of the new law follow:

Normal taxes: Rate of 1½ per cent upon the first $4,000 of taxable income; 3 per cent on incomes between $4,000 and $8,000 and 5 per cent on incomes above $8,000. Old rates were 2, 4, and 6 per cent.

Personal exemptions: $1,500 for single persons and $3,500 for married persons. Old exemptions $1,000 and $2,500, respectively.

Earned income: 25 per cent reduction of net tax upon earned incomes of $20,000 or less. Old limit, $10,000.

Surtaxes: Rates range from 1 per cent on $10,000 income to maximum of 20 per cent on incomes of $100,000 and more. Old rates, 1 per cent on $10,000 with a maximum of 40 per cent on $500,000 and over.

Corporation tax: Tax of 13 per cent on 1925 incomes payable this year, divided as follows: 6¼ per cent on earnings to July 1 and 6¾ per cent on earnings from July to December. After this year the rate is fixed at 13½ per cent, instead of the present 12½ per cent. This, one of the rare increases, was made to offset elimination of capital stock tax.

Automobiles: Tax of 3 per cent, replacing 5 per cent rate. Taxes on trucks repealed, effective in 30 days from enactment of law.

Alcohol taxes: Reduced from $2.20 a gallon to $1.65, effective Jan. 1, 1927, and $1.10, effective Jan. 1, 1928.

Sharp reductions in inheritance and estate taxes

Black & Decker Acquire Manufacturing Plant in Middle West

Black & Decker Mfg. Co., Towson, Md., manufacturer of portable electric tools has acquired the plant, patents and properties of the Marschke Mfg. Co., Indianapolis.

The Marschke company has been building electric grinders, swing grinders, roll radius grinders, snaggers and buffers for more than a decade. The buildings of the Marschke plant are of the modern daylight type with up-to-date equipment. The Marschke grinders and buffers start where the present Black & Decker line is regarded as leaving off and goes up to machines as large as 20 hp. carrying 30 in. wheels.

The Marschke plant will continue operation under the supervision of F. W. and W. A. Marschke, founders of the business, in collaboration with the Black & Decker engineering department. The Marschke line of grinders will be sold through the jobbers by the present Black & Decker organization.

On March 1 and 2 a meeting of 35 Black & Decker executives and territorial managers was held at the Marschke plant at Indianapolis to discuss matters pertaining to operation and sales of this new line.

To Install More Coke Ovens at Hamilton

The Hamilton By-Product Coke Ovens, Ltd., Hamilton, Ont., has awarded a contract to A. T. Leavitt, Cleveland, for the construction of a battery of by-product coke ovens, together with all other plant additions.

The Hamilton Company now has a battery of 25 Semet-Solvay ovens, having a daily capacity of 450 tons of coal. This plant has been considered a model of its kind, and its operations have been widely commented upon. The plant additions covered by the new contract will bring the daily capacity of this plant up to 1000 net tons of coal per day.

The plant is self-contained with a modern boiler house, by-product recovery apparatus, coal handling equipment, and coke handling equipment for the preparation of foundry and domestic coke. It is understood that Wilputte ovens will be installed under this contract and that the coke handling equipment will be furnished by Heyl & Patterson, Pittsburgh.

Seven Weeks' Supply of Coal on Hand

Industrial consumption of bituminous and anthracite coal showed a slight gain during January, according to the National Association of Purchasing Agents. The estimated consumption was 41,892,000 tons. Industrial stocks on hand Feb. 1 totaled 66,190,000 tons, a slight decline under the Jan. 1 figure of 68,399,000 tons. The stock on hand Feb. 1 was enough to last 49 days at the January daily consumption rate of 1,351,360 tons. This is a slight drop under the figure for Jan. 1, which showed 54 day's supply on hand, but is a marked improvement over the situation on Feb. 1 last year, when the supply on hand was 50,028,000 tons, or enough to last 38 days at the January daily consumption rate of 1,449,000 tons.

Germans to Make Centrifugal Cast Iron Pipe

Announcement is made that centrifugal cast iron pipe is to be made in Germany under the DeLavaud patents. The Gelsenkerchener Bergwerks, a member of the Rheinelbe Union, has accepted terms whereby it will take out a license. The patents are owned by the Centrifugal Pipe Corporation and royalties on all pipe made by the German company will be paid to it. The German company has 10 machines nearly ready to operate and production is expected to start within six weeks.

The statement also is further to the effect that the company is expected to use this process exclusively on all sizes to which it is applicable, eliminating the old sand cast and other methods on such sizes.

February Iron Output Declines

Daily Rate Falls off 2566 Tons, or 2.4 Per Cent—Net Gain of 2 in Active Furnaces

FROM data collected largely by wire and with the output of only two small blast furnaces estimated, the February pig iron production of the country showed a decline from that of January. The daily rate last month was 2566 tons less than that of January, a decrease of 2.4 per cent. This contrasts with an increase of 2 per cent in January over December and a gain of 4 per cent in December over November. The last month in which a decrease was registered was in July, 1925.

The production of coke pig iron for the 28 days in February was 2,923,415 gross tons, or 104,408 tons per day, as compared with 3,316,201 tons, or 106,974 tons per day, for the 31 days in January. The January daily average was 2121 tons in excess of that of December.

Contrasting with the net loss of 10 furnaces in January, there was a gain of 2 furnaces in February. Seven furnaces were blown in and 5 were blown out or banked. The January loss was the first since June, 1925. The February net gain of 2 furnaces recalls the net gain of 1 furnace in July and 2 in August last year, the beginning of the increase in output during subsequent months.

The number of furnaces active on March 1 was 226, with an estimated daily capacity of 104,800 tons. This compares with an estimated capacity of 104,065 tons per day for the 224 furnaces active on Feb. 1. Of the 7 furnaces blown in, 3 were Steel Corporation stacks, 3 were merchant furnaces and one was that of an independent steel company. Of the 5 furnaces shut

Daily Rate of Pig Iron Production by Months—Gross Tons

	Steel Works	Merchant*	Total
February, 1925	90,707	24,084	114,791
March	90,741	24,234	114,975
April	83,827	24,805	108,632
May	74,415	20,127	94,542
June	70,452	18,663	89,115
July	65,715	20,221	85,936
August	68,530	18,711	87,241
September	70,300	20,573	90,873
October	76,464	21,064	97,528
November	77,262	23,505	100,767
December	81,552	23,301	104,853
January, 1926	83,867	23,107	106,974
February	81,148	23,260	104,408

*Includes pig iron made for the market by steel companies.

Pig Iron Production by Districts, Gross Tons

	Feb. (28 days)	Jan. (31 days)	Dec. (31 days)	Nov. (30 days)
New York	201,751	232,265	194,091	176,700
New Jersey	.....	.....	.....	.....
Lehigh Valley	75,728	84,111	83,016	83,180
Schuylkill Valley	67,210	72,396	71,288	65,388
Lower Susquehanna and Lebanon Valleys	39,516	44,637	40,086	39,187
Pittsburgh district	642,236	765,621	765,844	638,689
Shenango Valley	99,357	120,496	130,919	124,527
Western Pa.	118,490	121,523	115,105	109,276
Maryland, Virginia and Kentucky	71,724	85,479	79,269	74,500
Wheeling district	121,326	124,663	121,065	116,880
Mahoning Valley	263,866	306,921	278,935	271,885
Central and Northern Ohio	260,458	313,769	324,229	316,956
Southern Ohio	42,864	48,227	44,604	48,756
Illinois and Indiana	544,069	584,812	580,473	570,721
Mich., Minn., Mo., Wis., Colo. and Utah	134,691	151,715	151,398	138,017
Alabama	228,799	248,274	257,705	237,285
Tennessee	11,300	11,292	12,481	11,059
Total	2,923,415	3,316,201	3,250,448	3,023,006

Coke and Anthracite Furnaces in Blast

Furnaces	Total Stacks	—March 1— In Blast	Capacity per Day	—Feb. 1— In Blast	Capacity per Day
New York:					
Buffalo	21	15	6,545	15	6,715
Other New York	4	2	660	2	775
New Jersey	4	0	.....	0	.....
Pennsylvania:					
Lehigh Valley	12	6	2,450	6	2,460
Spiegeleisen	2	2	255	2	250
Schuylkill Valley	12	6	2,490	6	2,335
Lower Susquehanna	8	3	1,190	3	1,140
Ferromanganese	1	0	.....	0	.....
Lebanon Valley	4	1	215	1	175
Ferromanganese	2	0	.....	1	80
Pittsburgh District	52	41	22,540	42	23,165
Ferro and Spiegel	4	3	400	2	360
Shenango Valley	15	8	3,960	7	3,340
Western Pa.	19	9	3,720	9	3,660
Ferro and Spiegel	2	2	310	2	315
Maryland	5	5	2,030	4	1,855
Ferromanganese	1	0	.....	1	170
Wheeling District	13	9	4,330	9	4,240
Ohio					
Mahoning Valley	26	18	9,315	18	9,900
Central and Northern	22	16	9,360	16	8,900
Southern	13	5	1,720	5	1,550
Illinois and Indiana	42	33	19,570	31	18,800
Mich., Wis. and Minn.	12	8	3,010	8	3,150
Colo., Mo. and Utah	7	4	1,800	4	1,740
The South:					
Virginia	17	1	150	0	.....
Kentucky	7	1	360	2	630
Alabama	35	24	8,095	24	7,900
Ferromanganese	1	1	75	1	95
Tennessee	12	3	400	3	365
Total	375	226	104,800	224	104,065

Production of Steel Companies for Own Use—Gross Tons

	Total Iron, Spiegel and Ferro		Spiegeleisen and Ferromanganese* —1925—		—1926—	
	1925	1926	Fe-Mn	Spiegel	Fe-Mn	Spiegel
Jan.	2,692,537	2,599,876	23,578	5,418	29,129	7,746
Feb.	2,539,785	2,272,150	18,184	4,910	22,309	7,984
Mar.	2,812,995	.....	20,062	5,449	....	....
Apr.	2,514,828	.....	21,448	5,341	....	....
May	2,306,887	.....	22,679	5,294	....	....
June	2,113,566	.....	19,836	4,972	....	....
½ year	14,980,598	.....	125,787	31,384	....	....
July	2,037,160	.....	16,614	5,074	....	....
Aug.	2,124,439	.....	18,867	4,939	....	....
Sept.	2,109,205	.....	18,381	5,162	....	....
Oct.	2,370,382	.....	21,421	5,071	....	....
Nov.	2,317,888	.....	25,490	6,375	....	....
Dec.	2,528,120	.....	26,072	7,756	....	....
Year	28,467,792	.....	252,632	65,761	....	....

*Includes output of merchant furnaces.

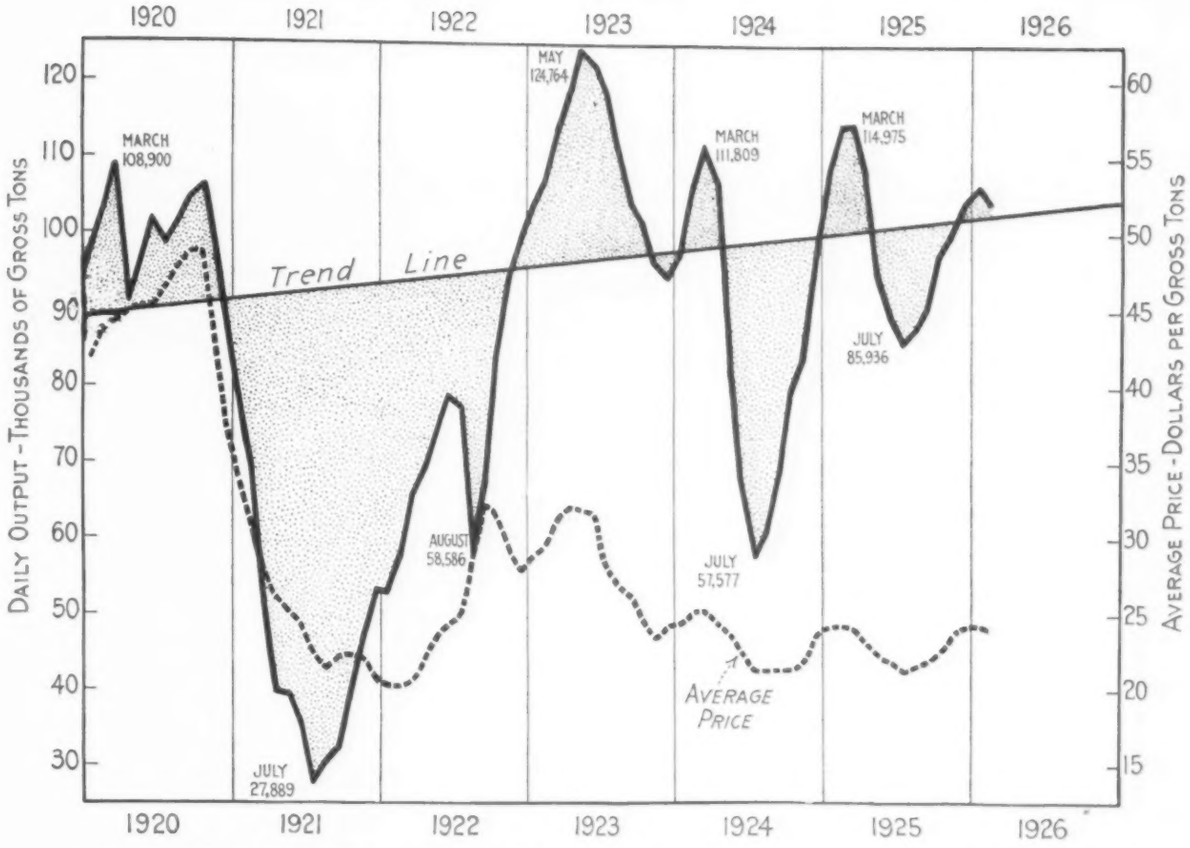
Production of Coke and Anthracite Pig Iron in United States by Months, Beginning Jan. 1, 1924—Gross Tons

	1924	1925	1926
Jan.	3,018,890	3,370,336	3,316,201
Feb.	3,074,757	3,214,143	2,923,415
Mar.	3,466,086	3,564,247	.....
Apr.	3,233,428	3,258,958	.....
May	2,615,110	2,930,807	.....
June	2,026,221	2,673,457	.....
½ year	17,434,492	19,011,948	.....
July	1,784,899	2,664,024	.....
Aug.	1,887,145	2,704,476	.....
Sept.	2,053,264	2,726,198	.....
Oct.	2,477,127	3,023,370	.....
Nov.	2,509,673	3,023,006	.....
Dec.	2,961,702	3,250,448	.....
Year*	31,108,302	36,403,470	.....

*These totals do not include charcoal pig iron. The 1924 production of this iron was 212,710 tons.

Daily Average Production of Coke and Anthracite Pig Iron in the United States by Months Since Jan. 1, 1922—Gross Tons

	1922	1923	1924	1925	1926
Jan.	53,063	104,181	97,384	108,720	106,974
Feb.	58,214	106,935	106,026	114,791	104,408
Mar.	65,675	113,673	111,809	114,975	.....
Apr.	69,070	118,324	107,781	108,632	.....
May	74,409	124,764	84,358	94,542	.....
June	78,701	122,548	67,541	89,115	.....
½ year	66,578	115,147	95,794	105,039	.....
July	77,592	118,656	57,577	85,936	.....
Aug.	58,586	111,274	60,875	87,241	.....
Sept.	67,791	104,184	68,442	90,873	.....
Oct.	85,092	101,586	79,907	97,528	.....
Nov.	94,990	96,476	83,656	100,767	.....
Dec.	99,577	94,225	95,539	104,853	.....
Year	73,645	109,713	85,075	99,831	.....



Daily Pig Iron Output in February About 2.4 Per Cent Less Than in January; Prices Slightly Lower

Inclined line represents the gradually increasing theoretical needs of the country, and thus shows production is now above the so-called normal. Dotted line represents the average price in dollars per gross ton of No. 2 Southern at Cincinnati, No. 2 at Chicago and No. 2X at Philadelphia

down, 3 were independent steel company units and 2 were merchant stacks.

The ferromanganese output in February was 22,309 tons, as compared with 29,129 tons in January. The spiegeleisen production was 7084 tons last month; in January it was 7746 tons.

The removal from the list of blast furnaces of the Topton and the two Temple furnaces in the Schuylkill Valley, Pa., reduces the total to 375.

Among the furnaces blown in during February were the following: One furnace of the Pittsburgh Crucible Steel Co. in the Pittsburgh district; No. 2 Newcastle furnace of the Carnegie Steel Co. in the Shenango Valley; one Josephine furnace in western Pennsylvania; the Pulaski furnace in Virginia; Anna furnace in the Mahoning Valley, and two South Chicago furnaces of the Illinois Steel Co. in the Chicago district.

Among the furnaces blown out or banked during February were the following: The Sheridan furnace in the Lebanon Valley; one Eliza furnace of the Jones & Laughlin Steel Corporation in the Pittsburgh district; the Emporium furnace in western Pennsylvania; one Ashland furnace of the American Rolling Mill Co. in Kentucky, and one Haselton furnace of the Republic Iron & Steel Co. in the Mahoning Valley.

Donner Steel Co. Buys Electric Furnace

The Donner Steel Co., Buffalo, has ordered from the American Bridge Co. a 25-ton Heroult electric furnace, which will be installed about mid-summer. The furnace will be utilized to extend the Donner Steel Co.'s business in alloy and other special steels, especially with the automobile industry. Hot metal charges direct from the open-hearth furnaces will be used.

To Call Coal Strike in Northern West Virginia

PITTSBURGH, March 1.—Apparently the leaders of the United Mine Workers of America are not discouraged by the setbacks that have been sustained in the anthracite strike and in their efforts to keep the southern West Virginia soft coal district under union domination and to reunionize the Fairmont, or northern West Virginia, field.

It is now proposed to call a strike in the Fairmont district to restore that field to the union. On April 1, 1925, a strike was called which failed, and another call on Sept. 26 last year likewise caused few, if any, of the men throw down their tools. There is some doubt as to whether this time the men will be asked to quit on April 1 or May 15, but the operators of the field are undisturbed because there is ample evidence that the men are better satisfied with steady work at a wage below the union scale than no work or, at best, part-time work at the union rate. The union leaders say the entire resources of the United Mine Workers will be concentrated in the Fairmont drive, but that threat is regarded as an empty one, since it was only a few days ago that the union stopped relief payments to strikers in the southern West Virginia field, because of the lack of funds, and instructed the men to go back to work. The strike in this field was a failure from the start because few operations had to stop for lack of men at wages under the union scale.

Meanwhile, the Pittsburgh Coal Co., one of the largest commercial soft coal producers in the country, which could not operate profitably on the union wage scales and shut down all of its mines, in the past few months has reopened seven of them and is daily adding to its output with its men on the November, 1917, wage scale, about one-third below union scale.

Iron and Steel Markets

March Promises Greater Output

Pig Iron Production, Lower in February, Is Now Gaining—Steel Consumption Well Maintained—Further Effort to Strengthen Prices

STEEL mill operations are holding at the recent high percentages and the promise for March is that the larger producers will increase their January-February average. The rate of orders is little changed, with no well defined signs as yet of a spring movement.

It is now apparent that steel companies are making a better adjustment of their output to current consumption than was the case in the first two months of 1925. Thus, the expectation now is that, while the present quarter's production will fall 5 to 10 per cent below that of the first three months of last year, the forthcoming quarter will see no repetition of the decline of 17 per cent from the first quarter rate that came in the April-June period last year.

Neither buyers nor sellers are overlooking the bearing of this situation on the effort the mills are now making, particularly in sheets and plates, to maintain a steadier market.

February pig iron statistics show a falling off from the January rate, but with the difference that on Feb. 1 production was declining, while on March 1 it was on the up grade.

At 2,923,415 tons for the 28 days, last month's output was at a daily rate of 104,408 tons. The January total was 3,316,201 tons for 31 days, or 106,974 tons a day, 2,566 tons a day more than in February.

Seven furnaces blew in last month and five blew out, a net gain of two against a net loss of 10 in January. On March 1 the 226 furnaces in blast had a capacity of 104,800 tons a day, as against 104,065 tons a day for the 224 furnaces active on Feb. 1.

Two Bethlehem furnaces (one at Johnstown and one at Bethlehem) are blowing in this week and one Jones & Laughlin furnace at Pittsburgh is scheduled to start. With a total of 375 furnaces this would give 61 per cent numerical activity.

In the main outlets for steel—railroads, construction and automobiles—consumption is maintained. Track work is keeping rail and track supply mills well employed. With one important exception automobile builders have increased their production this month. In fabricating contracts the showing is favorable, the 40,000 tons booked making the past week next to the best for this year.

Prices of the major products are generally on the basis of 2c., Pittsburgh, for bars, 1.90c. for structural shapes, and 1.85c. for plates. The Eastern plate market shows a renewed effort of producers to get a profit. A 10 per cent wage reduction by one mill a few months ago has been followed by a second mill this week.

Two scout cruisers for the Navy, one to be built at the Brooklyn Navy Yard and the other at a private yard, will each take 10,000 tons of steel, including armor plate.

Orders for 2,300 cars for the Illinois Central and 23 locomotives for the Southern Pacific featured a week of moderate railroad equipment business. February orders amounted to 12,300 cars against 8,500 in January.

Coke is still the most influential factor in the merchant pig iron market. The continued decline in price has brought blast furnace coke to $3 per ton at ovens this week, as against $9.50 just before the anthracite strike ended. Blast furnaces paid $3.75 to $4.10 on their first quarter contracts, and the second quarter price may run from $3 to $3.25. Pig iron buyers are waiting to see what reduction, if any, this may bring to them.

Cast iron pipe has been reduced to $40 a ton at Birmingham, Ala. The French works at Pont-a-Mousson has meanwhile closed 3500 tons here, including 2500 tons for Rochester, N. Y.

As steel imports increase, there are interesting cross currents. While 2000 tons of rails for Central America and bars for New Orleans were going down the Warrior River last week from Ensley, Ala., 500 tons of billets from France were being carried upstream to Birmingham to be rolled into bands, hoops and cotton ties.

The rush to beat a tariff advance accounts in part for further Japanese buying. Following recent large rail orders placed here, 4000 tons have been awarded to a German mill. Three lots yet open amount to 11,000 tons. France will supply 3500 tons of seamless pipe for the Nippon Oil Co.

THE IRON AGE composite price for finished steel advanced to 2.431c. per lb., from 2.424c. last week—the first advance in about three months.

Pittsburgh

Plates Up to 1.85c. — Coke Declines Further—Heavy Melting Advances

PITTSBURGH, March 2.—Steel orders maintain the steady gait which has prevailed since the opening of the year, and if there has been any fluctuation in volume it has been upward. Plant operations are holding at about the recent average, but here also the tendency is toward greater engagement of productive capacity. In prices the prevailing condition is one of steadiness, but manufacturers are more disposed to seek higher figures on the heavy tonnage products. Already some effort is being made to advance steel bars to 2c., base Pittsburgh, on large lots, and 2.10c. for the ordinary tonnages. Plate makers also are taking a stronger stand on prices, and with sales again fairly easy to make at 1.85c., Pittsburgh, there is not much tendency to go below that price even on the most attractive orders that are presented. Independent sheet makers since a week ago have generally followed the lead of the American Sheet & Tin Plate Co. as to second quarter prices.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics
At Date, One Week, One Month, and One Year Previous

For Early Delivery

Pig Iron, Per Gross Ton:	Mar. 2, 1926	Feb. 23, 1926	Feb. 2, 1926	Mar. 3, 1925
No. 2X, Philadelphia‡	$23.76	$23.76	$24.26	$25.01
No. 2, Valley Furnace†	20.50	20.50	20.50	21.50
No. 2, Southern, Cin'ti†	25.69	25.69	25.69	24.05
No. 2 Birmingham, Ala.†	22.00	22.00	22.00	20.00
No. 2 foundry, Chicago*	23.00	23.00	23.00	24.00
Basic, del'd, eastern Pa	23.00	23.00	23.00	23.75
Basic, Valley furnace	20.00	20.00	20.00	21.50
Valley Bessemer del. P'gh.	22.76	22.76	22.76	24.26
Malleable, Chicago*	23.00	23.00	23.00	24.00
Malleable, Valley	20.50	20.50	20.50	21.50
Gray forge, Pittsburgh	21.76	21.76	21.76	22.76
L. S. charcoal, Chicago	29.04	29.04	29.04	29.04
Ferromanganese, furnace	115.00	115.00	115.00	115.00
Rails, Billets, Etc., Per Gross Ton:				
O.-h. rails, heavy, at mill	$43.00	$43.00	$43.00	$43.00
Bess. billets, Pittsburgh	35.00	35.00	35.00	37.00
O.-h. billets, Pittsburgh	35.00	35.00	35.00	38.00
O.-h. sheet bars, P'gh	36.00	36.00	36.00	38.00
Forging billets, base, P'gh.	40.00	40.00	40.00	42.50
O.-h. billets, Phila	40.30	40.30	41.30	41.67
Wire rods, Pittsburgh	45.00	45.00	45.00	48.00
Light rails at mill	35.00	35.00	36.00	40.32
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb.	1.90	1.90	1.90	2.10
Finished Iron and Steel,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	2.22	2.22	2.22	2.28
Iron bars, Chicago	2.00	2.00	2.00	2.10
Steel bars, Pittsburgh	2.00	2.00	2.00	2.10
Steel bars, Chicago	2.10	2.10	2.10	2.20
Steel bars, New York	2.34	2.34	2.34	2.44
Tank plates, Pittsburgh	**1.85**	1.80	1.80	2.00
Tank plates, Chicago	2.10	2.10	2.10	2.30
Tank plates, New York	**2.14**	2.09	2.09	2.34
Beams, Pittsburgh	1.90	1.90	1.90	2.10
Beams, Chicago	2.10	2.10	2.10	2.30
Beams, New York	2.24	2.24	2.24	2.44
Steel hoops, Pittsburgh	2.50	2.50	2.50	2.50

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

Sheets, Nails and Wire,	Mar. 2, 1926	Feb. 23, 1926	Feb. 2, 1926	Mar. 3, 1925
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh.	3.25	3.25	3.35	3.50
Sheets, black, No. 28, Chicago dist. mill	3.45	3.45	3.45	3.70
Sheets, galv., No. 28, P'gh.	4.50	4.50	4.60	4.75
Sheets, galv., No. 28, Chicago dist. mill	4.70	4.70	4.70	4.85
Sheets, blue, 9 & 10, P'gh.	2.50	2.50	2.50	2.70
Sheets, blue, 9 & 10, Chicago dist. mill	2.60	2.60	2.60	2.80
Wire nails, Pittsburgh	2.65	2.65	2.65	2.85
Wire nails, Chicago dist. mill	2.70	2.70	2.70	2.95
Plain wire, Pittsburgh	2.50	2.50	2.50	2.60
Plain wire, Chicago dist. mill	2.55	2.55	2.55	2.70
Barbed wire, galv., P'gh.	3.35	3.35	3.35	3.55
Barbed wire, galv., Chicago dist. mill	3.40	3.40	3.40	3.65
Tin plate, 100 lb. box, P'gh.	$5.50	$5.50	$5.50	$5.50
Old Material, Per Gross Ton:				
Carwheels, Chicago	$17.00	$17.00	$17.50	$18.50
Carwheels, Philadelphia	17.50	17.50	17.50	19.00
Heavy steel scrap, P'gh.	**17.50**	17.00	18.00	18.50
Heavy steel scrap, Phila.	15.50	15.50	16.00	16.00
Heavy steel scrap, Ch'go	13.75	13.75	14.25	17.25
No. 1 cast, Pittsburgh	17.00	17.00	17.00	19.00
No. 1 cast, Philadelphia	17.50	17.50	18.00	18.00
No. 1 cast, Ch'go (net ton)	17.00	17.00	17.00	18.50
No. 1 RR. wrot. Phila.	17.50	17.50	18.00	19.00
No. 1 RR. wrot. Ch'go (net)	12.75	12.75	13.25	15.50
Coke, Connellsville, Per Net Ton at Oven:				
Furnace coke, prompt	*$5.00*	$3.75	$10.00	$3.50
Foundry coke, prompt	*4.50*	4.75	11.00	4.25
Metals,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	*14.37½*	14.50	14.12½	14.75
Electrolytic copper, refinery	*13.87½*	14.00	13.75	14.37½
Zinc, St. Louis	*7.35*	7.75	8.07½	7.30
Zinc, New York	*7.70*	8.10	8.42½	7.65
Lead, St. Louis	*8.60*	8.92½	9.10	8.75
Lead, New York	*8.90*	9.15	9.25	9.00
Tin (Straits), New York	*64.00*	64.75	62.00	54.87½
Antimony (Asiatic), N. Y.	*20.50*	21.00	21.50	16.00

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

THE IRON AGE Composite Prices

Finished Steel

March 2, 1926, 2.431c. Per Lb.

One week ago	2.424c.
One month ago	2.439c.
One year ago	2.546c.
10-year pre-war average	1.689c.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 88 per cent of the United States output of finished steel.

	High		Low	
1926	2.453c.,	Jan. 5;	2.424c.,	Feb. 9
1925	2.560c.,	Jan. 6;	2.396c.,	Aug. 18
1924	2.789c.,	Jan. 15;	2.460c.,	Oct. 14
1923	2.824c.,	April 24;	2.446c.,	Jan. 2

Pig Iron

March 2, 1926, $21.46 Per Gross Ton

One week ago	$21.46
One month ago	21.54
One year ago	22.25
10-year pre-war average	15.72

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham.

	High		Low	
1926	$21.54,	Jan. 5;	$21.46,	Feb. 23
1925	22.50,	Jan. 13;	18.96,	July 7
1924	22.88,	Feb. 26;	19.21,	Nov. 3
1923	30.86,	March 20;	20.77,	Nov. 20

On the whole, the situation, whether viewed from the sales or production viewpoint, is beginning to be accepted as fairly satisfactory. There has been disappointment, of course, that the market has not continued to show the activity that marked it in the latter part of last year, but it is more a case of expectations not realized than that business has not been all that was possible in view of the weather conditions and the efficiency of the mills and the railroads.

The trade has not abandoned the idea that 1926 will be a good year in steel, but there has been a subsidence of the notion that the industry would make another record production mark. Last year's fine showing was the result of a combination of unusual demands from several sources, notably in automobiles and structural work. The automobile industry has started slowly this year, and while much construction no doubt will go forward this year, the present outlook is that it will not reach the 1925 volume. The real season for automobile production and distribution is in the spring and summer, and it is, of course, too early to say that that industry will not have a good year. There are mixed ideas as to railroad business, regarded as necessary to take up any slack there may be in structural steel. It is contended by some that the railroads must have bridges, terminals and equipment, but, on the other hand, there is the feeling that the agitation for lower freight rates and for wage advances for some kinds of railroad labor, coupled with lighter car loadings, will create a spirit of conservatism in purchases. The decision of the Interstate Commerce Commission against the Nickel Plate merger probably means a holding up

of 20,000 cars that were to be placed in the event that the consolidation was approved.

This year, it is believed, will see a large volume of pipe business for the oil fields and unless the weather is unfavorable to the crops, there should be another big pack of fruits and vegetables and a consequent heavy consumption of tin plate.

Some good-sized purchases of scrap have given the market here a rather stiff boost. The pig iron market continues inactive and indefinite, with buyers disposed to delay buying as long as possible against their second quarter requirements, being influenced in this course by the continued decline in coke prices which has carried furnace grade to $3 per net ton at ovens. That price is less than a third of the price ruling just before the settlement of the hard coal strike and compares with prices all the way from $3.75 to $4.10 on first quarter contracts. It now looks like a second quarter price of $3 to $3.25 on furnace coke, and pig iron buyers naturally are expecting lower iron prices.

Pig Iron.—This market has gone through another week of intense dullness. Producers seem to be shipping practically all the iron they are making and do not see the need of forcing business, while buyers, impressed by the continued decline in furnace coke which has carried that market 75c. to $1 a ton below the first quarter contract basis, are holding off on their second quarter purchases in the expectation of lower iron prices. On such business as is passing, mostly single carloads, recent prices still are obtainable. Merchant producers will not get any relief from coke costs for 30 days and are disposed to maintain present prices, with the belief that there is not going to be an excessive supply of merchant iron in the near future. One Josephine, Pa., furnace of the McKinney Steel Co. has recently resumed production but it is believed that this is for a short campaign to complete some local obligations which recently were being supplied from Cleveland. The stack of the Clinton Iron & Steel Co., Pittsburgh, which was scheduled to resume production March 1, probably will not go in until about the middle of this month, and the Sharpsville Furnace Co., on account of increased demand from an associated company which it is serving on a requirement basis, has withdrawn from the merchant pig iron market. The Jones & Laughlin Steel Corporation will probably start up one of its Eliza group which was recently banked, in the next week or 10 days. W. P. Snyder & Co. make the February average price of basic iron from Valley furnaces $20 and Bessemer $21, the same prices as in January and December.

We quote Valley furnace the freight rate for delivery to the Cleveland or Pittsburgh district being $1.76 per gross ton:

Basic	$20.00
Bessemer	21.00
Gray forge	20.00
No. 2 foundry	20.50
No. 3 foundry	20.00
Malleable	20.50
Low phosphorus, copper free	$28.00 to 28.50

Ferroalloys.—The market here is very quiet so far as new business is concerned, interest in ferromanganese being particularly low. That material remains quotable at $115, Atlantic seaboard, for either domestic or British product, but intimations are beginning to be heard again of a possible cut on the latter. British makers have not secured much American business so far this year, and home demands, though fairly good, are no tax upon the supply. One reason for maintaining prices has been the fact that a reduction in the export price would automatically cause a cut in the home market price, because of the danger of running afoul of the American anti-dumping law. The market is firm on 20 per cent spiegeleisen, as that grade is scarce. Some difficulty is encountered in maintaining ferrotungsten prices. This appears to be due to sales of tungsten ore on a cost plus conversion arrangement that produces a lower price than most makers are asking on ferrotungsten. Consumers are specifying fairly freely on 50 per cent ferrosilicon contracts. Prices are given on page 647.

Semi-Finished Steel.—Specifications against contracts constitute the main business at present, and as non-integrated manufacturers generally appear to have overestimated their requirements for this quarter and have somewhat larger stocks than usual, they are not ordering shipments with much freedom. There is almost no fresh buying. Quotations are unchanged, but are nominal. Negotiations are yet to start for second quarter tonnages. Improvement in the pipe market has not yet brought any quickening in the market for skelp, and it is still easy to buy at 1.90c. Prices are given on page 647.

Steel and Iron Bars.—The market on steel bars is still quotable at 2c., base Pittsburgh, on ordinary tonnages, but it is plain that large makers are not satisfied with that price and would like to see it a large tonnage quotation, with a price of 2.10c., base, for the small lots. Orders and specifications are coming in steadily to mills here and in Youngstown, but there is no sign yet that productive capacity is taxed, and most mills are still able to make prompt deliveries against new business. The situation would be helped considerably by large demands from the automotive industry, the lack of which has kept back considerable business from the makers of cold-finished bars. Several good-sized orders for reinforcing bars have lately come to local mills. Iron bars are steady as to price and demand. Prices are given on page 645.

Structural Steel.—Fabricating companies depending on Pittsburgh mills for plain material are still laggard about specifying against contracts, and while mills would like to get higher prices, the conditions do not favor such a move at the moment. Competition in fabricated steel is still rather severe and, being obliged to go low for jobs, the fabricators naturally try to make the mills share the burden. This immediate territory has not been productive of much business lately. Much building, including a large hotel and two combination theater and office buildings are being figured, but there are no signs yet of the placing of general contracts. Plain material prices are given on page 645.

Plates.—The market here appears to be a little stronger. While there has been some increase in the release of tonnages against railroad car orders and there are inquiries for river barges, which will take a considerable tonnage, the general demand is not heavy. Makers, however, seem to have tired of sales at unprofitable prices and with competition less active, sales at 1.85c., base Pittsburgh, are commoner and in the Pittsburgh district proper, small lots are moving at 1.90c. The quotable market is 1.85c. to 1.90c.

Wire Products.—Jobbers and manufacturing consumers are specifying very steadily, but banking on mill efficiency as well as remarkably fast railroad service, they are doing little or no advance buying. The total volume of orders is running larger than in the early weeks of the year, but that is regarded as a purely seasonal development. Favorable weather is counted on to help sales of fence, barbed wire and staples, which so far this year have been below expectations. Prices are very steady at recent levels. Production being kept in close conformity with consumption, an index of the latter is afforded by an average mill operation of from 65 to 70 per cent of capacity. Prices are given on page 645.

Rails and Track Supplies.—New business in standard section rails and track supplies is light, but there is a good movement against orders placed late last year. Prices are steady. Light rails are not moving with real snap, and prices are easy because there is much competition for passing orders. The ruling price is $35, base mill, on light billet rails. Prices are given on page 645.

Tubular Goods.—Demand for oil country goods is steadily expanding as spring draws near, and makers are looking for large orders from the Texas Panhandle, where an oil field of promise is under development. Pipe business may be considered as good for this time of the year, and pipe mill operations of around 70 to 75 per cent of capacity do not tell the entire story, since no small part of the current demand is being supplied from mill stocks. Some good-sized line pipe projects are pending, and with the approach of spring and a quickening of building activities, standard pipe is being called for more freely. Mill prices are holding despite

Prices of Finished Iron and Steel Products (Carload Lots)

Iron and Steel Bars

Soft Steel

	Base Per Lb.
F.o.b. Pittsburgh mills	2.00c.
F.o.b. Chicago	2.10c.
Del'd Philadelphia	2.32c.
Del'd New York	2.34c. to 2.44c.
Del'd Cleveland	2.19c.
F.o.b. Birmingham	2.15c. to 2.25c.
C.i.f. Pacific ports	2.35c.
F.o.b. San Francisco mills	2.35c. to 2.40c.

Billet Steel Reinforcing

F.o.b. Pittsburgh mills	1.90c. to 2.00c.

Rail Steel

F.o.b. mill	1.80c. to 1.90c.
F.o.b. Chicago	2.00c.

Iron

Common iron, f.o.b. Chicago	2.00c.
Refined iron, f.o.b. P'gh mills	3.00c.
Common iron, del'd Phila'phia	2.22c.
Common iron, del'd New York	2.24c.

Tank Plates

	Base Per Lb.
F.o.b. Pittsburgh mill	1.85c. to 1.90c.
F.o.b. Chicago	2.10c.
F.o.b. Birmingham	1.95c. to 2.05c.
Del'd Cleveland	2.04c. to 2.09c.
Del'd Philadelphia	2.12c.
Del'd New York	2.14c.
C.i.f. Pacific ports	2.30c.

Structural Shapes

	Base Per Lb.
F.o.b. Pittsburgh mill	1.90c. to 2.00c.
F.o.b. Chicago	2.10c.
F.o.b. Birmingham	2.05c. to 2.15c.
Del'd Cleveland	2.09c. to 2.19c.
Del'd Philadelphia	2.12c. to 2.22c.
Del'd New York	2.24c. to 2.34c.
C.i.f. Pacific ports	2.35c.

Hot-Rolled Flats (Hoops, Bands and Strips)

	Base Per Lb.
All gages, narrower than 6 in., P'gh	2.50c.
All gages, 6 in. and wider, P'gh	2.30c.
All gages, 6 in. and narrower, Chicago	2.60c.
All gages, wider than 6 in., Chicago	2.50c.

Cold-Finished Steel

	Base Per Lb.
Bars, f.o.b. Pittsburgh mills	2.50c.
Bars, f.o.b. Chicago	2.50c.
Bars, Cleveland	2.55c.
Shafting, ground, f.o.b. mill	*2.70c. to 3.00c.
Strips, f.o.b. Pittsburgh mills	3.90c.
Strips, f.o.b. Cleveland mills	3.90c.
Strips, delivered Chicago	4.20c.
Strips, f.o.b. Worcester mills	4.05c.

*According to size.

Wire Products

(To jobbers in car lots f.o.b. Pittsburgh and Cleveland)

	Base Per Keg
Wire nails	$2.65
Galv'd nails, 1-in. and longer	4.65
Galv'd nails, shorter than 1 in.	4.90
Galvanized staples	3.35
Polished staples	3.10
Cement coated nails	2.65

	Base Per 100 Lb.
Bright plain wire, No. 9 gage	$2.50
Annealed fence wire	2.65
Spring wire	3.50
Galv'd wire, No. 9	3.10
Barbed wire, galv'd	3.35
Barbed wire, painted	3.10

Chicago district mill and delivered Chicago prices are $1 per ton above the foregoing. Birmingham mill prices $3 a ton higher; Worcester, Mass., mill $3 a ton higher on production of that plant; Duluth, Minn., mill $2 a ton higher; Anderson, Ind., $1 higher.

Woven Wire Fence

	Base to Retailers Per Net Ton
F.o.b. Pittsburgh	$65.00
F.o.b. Cleveland	65.00
F.o.b. Anderson, Ind.	66.00
F.o.b. Chicago district mills	67.00
F.o.b. Duluth	68.00
F.o.b. Birmingham	68.00

Sheets

Blue Annealed

	Base Per Lb.
Nos. 9 and 10, f.o.b. Pittsburgh	2.45c. to 2.50c.
Nos. 9 and 10, f.o.b. Ch'go dist. mills	2.60c.
Nos. 9 and 10, del'd Phila'phia	2.82c.

Box Annealed, One Pass Cold Rolled

No. 28, f.o.b. Pittsburgh	3.25c. to 3.35c.
No. 28, f.o.b. Ch'go dist. mill	3.45c.
No. 28, del'd Phila'phia	3.67c.

Galvanized

No. 28, f.o.b. Pittsburgh	4.50c. to 4.60c.
No. 28, f.o.b. Chicago dist. mill	4.70c.
No. 28, del'd Philadelphia	4.92c.

Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh	3.25c. to 3.35c.
No. 28, f.o.b. Chicago dist. mill	3.45c.

Automobile Body Sheets

No. 22, f.o.b. Pittsburgh	4.40c.

Long Ternes

No. 28, 8-lb. coating, f.o.b. mill	4.85c.

Tin Plate

	Per Base Box
Standard cokes, f.o.b. P'gh district mills	$5.50
Standard cokes, f.o.b. Gary and Elwood, Ind.	5.60

Terne Plate

(*F.o.b. Morgantown or Pittsburgh*)

(Per package, 20 x 28 in.)

8-lb. coating, 100 lb. base	$11.40
8-lb. coating I.C.	11.70
15-lb. coating I.C.	14.85
20-lb. coating I.C.	$16.20
25-lb. coating I.C.	17.90
30-lb. coating I.C.	19.45
40-lb. coating I.C.	21.65

Alloy Steel Bars

(F.o.b. Pittsburgh or Chicago)

S. A. E. Series Numbers		Base Per 100 Lb.
2100*	(½% Nickel, 0.10% to 0.20% Carbon)	$3.20 to $3.25
2300	(3½% Nickel)	4.50 to 4.60
2500	(5% Nickel)	5.70 to 5.80
3100	(Nickel Chromium)	3.50 to 3.60
3200	(Nickel Chromium)	5.00 to 5.25
3300	(Nickel Chromium)	7.00 to 7.25
3400	(Nickel Chromium)	6.25 to 6.50
5100	(Chromium Steel)	3.50
5200*	(Chromium Steel)	7.00 to 7.50
6100	(Chrom. Vanadium bars)	4.20 to 4.30
6100	(Chrom. Vanad. spring steel)	3.80
9250	(Silicon Manganese spring steel)	3.20 to 3.25
	Carbon Vanadium (0.45% to 0.55% Carbon, 0.15% Vanad.)	4.10 to 4.20
	Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chrom., 0.15 Vanad.)	4.45 to 4.55
	Chromium Molybdenum bars (0.80—1.10 Chrom., 0.25—0.40 Molyb.)	4.25 to 4.35
	Chromium Molybdenum bars (0.50—0.70 Chrom., 0.15—0.25 Molyb.)	3.40 to 3.50
	Chromium Molybdenum spring steel (1—1.25 Chrom., 0.30—0.50 Molybdenum)	4.50 to 4.75

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for cold-drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10 in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4 in. down to and including 2½-in. squares, the price is $5 a gross ton above the 4 x 4 billet price.

*Not S. A. E. specifications, but numbered by manufacturers to conform to S. A. E. system.

Rails

	Per Gross Ton
Standard, f.o.b. mill	$43.00
Light (from billets), f.o.b. mill	35.00 to 36.00
Light (from rail steel), f.o.b. mill	33.00 to 34.00
Light (from billets), f.o.b. Ch'go mill	36.00 to 38.00

Track Equipment

(F.o.b. Mill)

	Base Per 100 Lb.
Spikes, ⅜ in. and larger	$2.80 to $3.10
Spikes, ½ in. and smaller	3.00 to 3.50
Spikes, boat and barge	3.25
Track bolts, all sizes	4.00 to 4.50
Tie plates, steel	2.25 to 2.35
Angle bars	2.75

Welded Pipe

Base Discounts f.o.b. Pittsburgh District and Lorain, Ohio, Mills

Butt Weld

Steel Inches	Black	Galv.	Iron Inches	Black	Galv.
⅛	45	19½	¼ to ⅜	+11	+39
¼ to ⅜	51	25½	½	22	2
½	56	42½	¾	28	11
¾	60	48½	1 to 1½	30	18
1 to 3	62	50½			

Lap Weld

2	55	43½	2	28	7
2½ to 6	59	47½	2½	26	11
7 and 8	56	43½	3 to 6	28	18
9 and 10	54	41½	7 to 12	26	11
11 and 12	53	40½			

Butt Weld, extra strong, plain ends

⅛	41	24½	¼ to ⅜	+19	+54
¼ to ⅜	47	30½	½	21	7
½	53	42½	¾	28	12
¾	58	47½	1 to 1½	30	14
1 to 1½	60	49½			
2 to 3	61	50½			

Lap Weld, extra strong, plain ends

2	53	42½	2	23	9
2½ to 4	57	46½	2½ to 4	29	15
4½ to 6	56	45½	4½ to 6	28	14
7 to 8	52	39½	7 to 8	21	7
9 and 10	45	32½	9 to 12	16	3
11 and 12	44	31½			

To the large jobbing trade the above discounts on steel pipe are increased on black by one point, with supplementary discount of 5%, and on galvanized by 1½ points, with supplementary discount of 5%. On iron pipe, both black and galvanized, the above discounts are increased to large jobbers by one point with supplementary discounts of 5 and 2½%.

Note.—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2½ points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

Boiler Tubes

Base Discounts f.o.b. Pittsburgh

Lap Welded Steel		Charcoal Iron	
2 to 2¼ in.	27	1½ in.	+18
2½ to 2¾ in.	37	1¾ to 1⅞ in.	+ 3
3 in.	40	2 to 2¼ in.	— 2
3¼ to 3¾ in.	42½	2½ to 3 in.	— 7
4 to 13 in.	46	3¼ to 4½ in.	— 9

Beyond the above discounts, 5 to 7 fives extra are given on lap welded steel tubes and 2 to 3 tens on charcoal iron tubes.

Standard Commercial Seamless Boiler Tubes

Cold Drawn

1 in.	60	3 in.	45
1¼ to 1½ in.	52	3¼ to 3½ in.	47
1¾ in.	36	4 in.	50
2 to 2¼ in.	31	4½, 5 and 6 in.	45
2½ to 2¾ in.	39		

Hot Rolled

2 and 2¼ in.	34	3¼ and 3½ in.	50
2½ and 2¾ in.	42	4 in.	53
3 in.	48	4½, 5 and 6 in.	48

Less carloads, 4 points less. Add $8 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing

	Per Cent Off List
Carbon, 0.10% to 0.30%, base	50 to 55
Carbon, 0.30% to 0.40%, base	45 to 50

Plus differentials for lengths over 18 ft. and for commercially exact lengths. Warehouse discounts on small lots are less than the above.

some weakness in the secondary markets. The market is still weak on boiler tubes. There is a fairly good demand, but it is not sufficient to give all makers a share; consequently, competition is rather keen. Discounts are given on page 645.

Sheets.—Demand for automobile body sheets still lags. Only in a few instances are they bought direct by the builders, and the body builders at present seem to be held up by changes in models and the necessity for new dies. Considering that the automobile industry calls for from 30 to 35 per cent of the total sheet production and that, as a whole, it is not taking half its regular quota, there is basis for some satisfaction over sheet business in general. For the third week running, the American Sheet & Tin Plate Co. had orders last week equal to more than 85 per cent of the weekly average of its two best years, and mill operations of that company rose slightly last week. Independent companies also have fared better than recently in orders, and the average operation of all producers is now approximately 80 per cent, against 75 per cent the middle of last month. Independent companies have generally followed the American Sheet & Tin Plate Co. in continuing first quarter prices on second quarter business. There has been no rush to contract for that period, but that is natural, since buyers want to be satisfied that the recent stiffening in prices is going to hold. Prices are given on page 645.

Tin Plate.—All capacity that can be operated economically is in operation, and there is no apparent letdown in the desire of container manufacturers to be fortified against a pack of perishable foods of even greater size than in 1925, which was a record year. The largest single producer is operating 90 per cent of its capacity and will add as soon as it can make repairs and secure a crew, the Pittsburgh works, New Kensington, Pa., an eight-mill unit which has been idle for the past two years. With Labelle works at Wheeling and Crescent works in Cleveland, it has been rated as an emergency plant. Stock items still are scarce.

Cold-Finished Steel Bars and Shafting.—Very steady demand is reported from all consuming industries. That from the automobile parts makers, however, still is for small lots, and the only encouraging feature is the insistence for prompt deliveries, which is interpreted as meaning small stocks in consuming hands. It is commented on that never before has there been a time when observance of quotations by producers was any more general than at present. The ordinary tonnage price remains at 2.50c., base Pittsburgh.

Bolts, Nuts and Rivets.—Makers here profess considerable satisfaction with bolt and nut business, because they believe that doubts as to prices among jobbers and consumers have been dispelled by the way the market has held over the past year. Makers representing fully 80 per cent of the large rivet capacity are quoting that product at $2.60, base, per 100 lb., Pittsburgh, and contend that not only contracts, but good size sales, have been closed at that base. A price $2 a ton lower, however, is still being made, but is usually for lots of a carload or more. Prices and discounts are given on page 647.

Hot-Rolled Flats.—The firmness of prices is the feature of the situation in these lines. Business is good, but is not keeping pace with shipments, and backlogs are decreasing. Prices are given on page 645.

Cold-Rolled Strips.—Total orders still are running smaller than earlier in the year, but the past few days have seen an increase in the number from the automotive industry and pressure for deliveries from that source is urgent. Prices are holding well at 3.90c., base Pittsburgh.

Coke and Coal.—Coke prices continue to give ground. Production is being cut as rapidly as possible to the basis of contract obligations, but there are still offerings well in excess of the spot demand and a clearance is possible only at, or near, buyers' valuations. There is no demand from the East for coke for domestic use; rather the Eastern trade is trying to dispose of a heavy accumulation and actually is making prices even lower than now rule at originating points. Spot furnace coke is now quotable at $3 to $3.25 per net ton at ovens, and spot foundry coke at $4.50 to $5.50. Negotiations for second quarter tonnages are slow in starting because consumers believe that they will get even more favorable terms by waiting. On furnace coke the hope of producers is $3.50, but pig iron producers are pressing for prices low enough to give them a profit in the event that they cannot maintain present pig iron prices. The coal market is feeling the effects of large accumulations on the Eastern seaboard, and very low prices rule on the domestic sizes. Industrial grades are holding at about recent prices, but slack coal is less plentiful and somewhat firmer. Prices are given on page 647.

Old Material.—The market here has taken a stronger turn since a week ago, and has advanced rather sharply on several grades. The change comes as a result of purchases of more than 10,000 tons of heavy melting steel, heavy breakable cast and machine shop turnings for delivery at Butler, Pa. For that delivery $17.75 to $18.25 was paid for heavy steel scrap, $16 to $16.50 for heavy breakable and from $13.75 to $14.25 for machine shop turnings. Coming on the heels of a purchase of 10,000 tons of heavy melting steel at $18 for delivery at another Pittsburgh district point, sentiment has undergone a considerable change, and there is a belief that the market has made a turn after dropping $2 a ton since the opening of the year. A week ago heavy melting steel could not be sold readily at more than $17.50, while on a bid and asked basis, heavy breakable cast was quoted at $14 to $15, and machine shop turnings at $13 to $13.50. Recent prices, however, found their basis in small lots which had to be moved, and the rise of the past week is partly accounted for in the difference that usually is demanded for the large tonnages. There is no evidence that the tonnages were hard to obtain at the prices paid, and with the spring approaching with its usual large yield of scrap, there is plausibility to the opinion of some in the trade that there must be more buying of sizable tonnages to sustain the past week's advance.

We quote for delivery to consumer's mill in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Per Gross Ton

Heavy melting steel	$17.75 to $18.25
No. 1 cast, cupola size	17.00 to 17.50
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa.	19.00 to 19.50
Compressed sheet steel	16.00
Bundled sheets, sides and ends	15.00
Railroad knuckles and couplers	20.50 to 21.00
Railroad coil and leaf springs	20.00 to 20.50
Low phosphorus blooms and billet ends	22.00 to 22.50
Low phosphorus plates and other material	21.00 to 21.50
Low phosphorus punchings	20.00 to 20.50
Steel car axles	22.00 to 23.00
Cast iron wheels	18.00 to 18.50
Rolled steel wheels	20.00 to 20.50
Machine shop turnings	13.75 to 14.25
Short shoveling turnings	13.50 to 14.00
Sheet bar crops	20.00 to 20.50
Heavy steel axle turnings	16.00 to 16.50
Short mixed borings and turnings	13.50 to 14.00
Heavy breakable cast	16.00 to 16.50
Cast iron borings	13.50 to 14.00
No. 1 railroad wrought	13.50 to 14.00
No. 2 railroad wrought	17.75 to 18.25

Buys Detrick & Harvey Line

Manning, Maxwell & Moore, Inc., New York, has purchased the name, good will, drawings and patterns of the Detrick & Harvey Machine Co., Baltimore. Hereafter the Detrick & Harvey line, particularly the open side and convertible planers, standard double housing planers and horizontal boring machines, will be manufactured in the plant of the Putnam Machine Works, Fitchburg, Mass., a subsidiary of Manning, Maxwell & Moore, Inc. J. W. Neidhardt, who in the past has been president of the Detrick & Harvey company, will be associated with Manning, Maxwell & Moore, specializing in the Detrick & Harvey line. The plant, machinery and equipment of the Detrick & Harvey company at Baltimore will be liquidated in the near future.

Semi-Finished Steel, Raw Materials, Bolts and Rivets

Semi-Finished Steel

F.o.b. Pittsburgh or Youngstown

Billets and Blooms

	Per Gross Ton
Rolling, 4-in. and over	$35.00
Rolling, 2-in. and smaller	36.00
Forging, ordinary	40.00
Forging, guaranteed	45.00

Sheet Bars

	Per Gross Ton
Open-hearth or Bessemer	$36.00

Slabs

	Per Gross Ton
8 in. x 2 in. and larger	$35.00
6 in. x 2 in. and smaller	36.00

Skelp

	Per Lb.
Grooved	1.90c.
Sheared	1.90c.
Universal	1.90c.

Wire Rods

	Per Gross Ton
*Common soft, base, No. 5 to ⅜-in.	$45.00
Common soft, coarser than ⅜-in.	$2.50 over base
Screw stock	$5.00 per ton over base
Carbon 0.20% to 0.40%	3.00 per ton over base
Carbon 0.41% to 0.55%	5.00 per ton over base
Carbon 0.56% to 0.75%	7.50 per ton over base
Carbon over 0.75%	10.00 per ton over base
Acid	15.00 per ton over base

*Chicago mill base is $46. Cleveland mill base, $45.

Raw Materials

Ores

Lake Superior Ores, Delivered Lower Lake Ports

	Per Gross Ton
Old range Bessemer, 51.50% iron	$4.55
Old range non-Bessemer, 51.50% iron	4.40
Mesabi Bessemer, 51.50% iron	4.40
Mesabi non-Bessemer, 51.50% iron	4.25
High phosphorus, 51.50% iron	4.15

Foreign Ore, c.i.f. Philadelphia or Baltimore

	Per Unit
Iron ore, low phos., copper free, 55 to 58% iron in dry Spanish or Algerian	9.50c. to 10c.
Iron ore, Swedish, average 66% iron	9.50c.
Manganese ore, washed, 51% manganese, from the Caucasus	45c.
Manganese ore, Brazilian or Indian, nominal	42c. to 44c.
Tungsten ore, high grade, per unit, in 60% concentrates	$12.50 to $14.00
	Per Ton
Chrome ore, Indian basic, 48% Cr_2O_3, crude, c.i.f. Atlantic seaboard	$22.00to $23.00
	Per Lb.
Molybdenum ore, 85% concentrates of MoS_2, delivered	55c. to 60c.

Coke

	Per Net Ton
Furnace, f.o.b. Connellsville prompt	$3.00 to $3.25
Foundry, f.o.b. Connellsville prompt	4.50 to 5.50
Foundry, by-product, Ch'go ovens	10.50
Foundry, by-product, New England, del'd	13.00
Foundry, by-product, Newark or Jersey City, delivered	11.52
Foundry, Birmingham	5.50 to 6.00
Foundry, by-product, St. Louis or Granite City	10.00

Coal

	Per Net Ton
Mine run steam coal, f.o.b. W. Pa. mines	$1.50 to $2.00
Mine run coking coal, f.o.b. W. Pa. mines	1.90 to 2.25
Mine run gas coal, f.o.b. W. Pa. mines	1.90 to 2.15
Steam slack, f.o.b. W. Pa. mines	1.15 to 1.25
Gas slack, f.o.b. W. Pa. mines	1.35 to 1.40

Ferromanganese

	Per Gross Ton
Domestic, 80%, furnace or seab'd	$115.00
Foreign, 80%, Atlantic or Gulf port, duty paid	115.00

Spiegeleisen

	Per Gross Ton Furnace
Domestic, 19 to 21%	$32.00 to $34.00
Domestic, 16 to 19%	31.00 to 33.00

Electric Ferrosilicon

	Per Gross Ton Delivered
50%	$85.00
75%	145.00

	Per Gross Ton Furnace		*Per Gross Ton Furnace*
10%	$42.00	12%	$42.00
11%	42.00	14 to 16%	45 to 46.00

Bessemer Ferrosilicon

F.o.b. Jackson County, Ohio, Furnace

	Per Gross Ton		*Per Gross Ton*
10%	$36.00	12%	$40.00
11%	38.00		

Silvery Iron

F.o.b. Jackson County, Ohio, Furnace

	Per Gross Ton		*Per Gross Ton*
6%	$28.50	10%	$34.00
7%	29.50	11%	36.00
8%	30.50	12%	38.00
9%	32.00		

Other Ferroalloys

Ferrotungsten, per lb. contained metal, del'd	$1.15 to $1.20
Ferrochromium, 4% carbon and up, 60 to 70% Cr., per lb. contained Cr. delivered	11.50c.
Ferrovanadium, per lb. contained vanadium, f.o.b. furnace	$3.25 to $4.00
Ferrocarbontitanium, 15 to 18%, per net ton, f.o.b. furnace, in carloads	$200.00
Ferrophosphorus, electrolytic, or blast furnace material, in carloads, 18%, Rockdale, Tenn., base, per net ton	$91.00
Ferrophosphorus, electrolytic, 24%, f.o.b. Anniston, Ala., per net ton	$122.50

Fluxes and Refractories

Fluorspar

	Per Net Ton
Domestic, 85% and over calcium fluoride, not over 5% silica, gravel, f.o.b. Illinois and Kentucky mines	$17.00 to $17.50
No. 2 lump, Illinois and Kentucky mines	$20.00
Foreign, 85% calcium fluoride, not over 5% silica, c.i.f. Atlantic port, duty paid.	$17.00 to $17.50
Domestic, No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2½% silica, f.o.b. Illinois and Kentucky mines	$32.50

Fire Clay

	Per 1000 f.o.b. Works High Duty	Moderate Duty
Pennsylvania	$43.00 to $46.00	$40.00 to $43.00
Maryland	48.00 to 50.00	43.00 to 45.00
Ohio	43.00 to 46.00	40.00 to 43.00
Kentucky	43.00 to 45.00	40.00 to 43.00
Illinois	43.00 to 45.00	40.00 to 43.00
Missouri	40.00 to 43.00	35.00 to 38.00
Ground fire clay, per ton	6.50 to	7.50

Silica Brick

	Per 1000 f.o.b. Works
Pennsylvania	$40.00
Chicago	49.00
Birmingham	54.00
Silica clay, per ton	$8.00 to 9.00

Magnesite Brick

	Per Net Ton
Standard size, f.o.b. Baltimore and Chester, Pa.	$65.00
Grain magnesite, f.o.b. Baltimore and Chester, Pa.	40.00

Chrome Brick

	Per Net Ton
Standard size	$45.00

Bolts, Nuts, Rivets and Set Screws

Bolts and Nuts

(Less-than-Carload Lots)

(F.o.b. Pittsburgh, Cleveland, Birmingham and Chicago)

	Per Cent Off List
Machine bolts, small, rolled threads	60 and 10
Machine bolts, all sizes, cut threads	50, 10 and 10
Carriage bolts, smaller and shorter, rolled threads	50, 10 and 10
Carriage bolts, cut threads, all sizes	50 and 10
Eagle carriage bolts	65 and 10
Lag bolts	60, 10 and 10
Plow bolts, Nos. 3 and 7 heads	50 and 10
(Extra of 20% for other style heads)	
Machine bolts, c.p.c. and t. nuts, ⅜ x 4 in.,	45, 10 and 5
Larger and longer sizes	45, 10 and 5
Bolt ends with hot-pressed nuts	50, 10 and 10
Bolt ends with cold-pressed nuts	45, 10 and 5
Hot-pressed nuts, blank and tapped, square,	4.00c. off list
Hot-pressed nuts, blank or tapped, hexagons,	4.40c. off list
C.p.c. and t. square or hex. nuts, blank or tapped	4.10c. off list
Washers*	6.50c. to 6.25c. off list

*F.o.b. Chicago and Pittsburgh.

The discount on machine, carriage and lag bolts is 5 per cent more than above for car lots. On hot-pressed and cold-punched nuts the discount is 25c. more per 100 lb. than quoted above for car lots.

Bolts and Nuts

(Quoted with actual freight allowed up to but not exceeding 50c. per 100 lb.)

	Per Cent Off List
Semi-finished hexagon nuts:	
⅞ in. and smaller, U. S. S.	80, 10 and 5
1 in. and larger, U. S. S.	75, 10 and 5
Small sizes, S. A. E.	80, 10, 10 and 5
S. A. E., ⅝ in. and larger	75, 10, 10 and 5
Stove bolts in packages	80, 10 and 5
Stove bolts in bulk	80, 10, 5 and 2½
Tire bolts	60 and 5

Semi-Finished Castellated and Slotted Nuts

(Actual freight allowed up to but not exceeding 50c. per 100 lb.)

(To jobbers and consumers in large quantities)

	Per 100 Net S.A.E.	U.S.S.		Per 100 Net S.A.E.	U.S.S.
¼-in.	$0.44	$0.44	⅝-in.	$2.35	$2.40
5/16-in.	0.515	0.515	⅞-in.	3.60	3.60
⅜-in.	0.62	0.66	1-in.	5.65	5.80
7/16-in.	0.79	0.90	1⅛-in.	8.90	8.90
½-in.	1.01	1.05	1¼-in.	12.60	13.10
9/16-in.	1.38	1.42	1⅜-in.	18.35	18.35
⅝-in.	1.70	1.78	1½-in.	21.00	21.00

Larger sizes.—Prices on application.

Large Rivets

	Base Per 100 Lb.
F.o.b. Pittsburgh	$2.50 to $2.60
F.o.b. Cleveland	2.70
F.o.b. Chicago	2.75

Small Rivets

	Per Cent Off List
F.o.b. Pittsburgh	70 and 10
F.o.b. Cleveland	70 and 10
F.o.b. Chicago	70 and 10 to 70 and 5

Cap and Set Screws

(Freight allowed up to but not exceeding 50c. per 100 lb.)

	Per Cent Off List
Milled cap screws	80 and 10
Milled standard set screws, case hardened	80
Milled headless set screws, cut thread	80
Upset hex. head cap screws, U. S. S. thread,	80, 10 and 10
Upset hex. cap screws, S. A. E. thread,	80 and 10
Upset set screws	80, 10 and 10 to 80, 10 and 5
Milled studs	70 and 5

Chicago

Two Blast Furnaces Go In — Mill Shipments Still Behind Bookings

CHICAGO, March 2.—Steel works blast furnace operations have been increased by the blowing of the eighth stack of the Illinois Steel Co. at South Chicago. With 11 stacks active at Gary, eight at South Chicago and one at Joliet, the Steel Corporation is operating 20 out of 27 furnaces in this district. Other steel works stacks now blowing are three at the Inland Steel Co., two at the Indiana Harbor plant of the Youngstown Sheet & Tube Co., and three at the Wisconsin Steel Works. The leading producer continues to operate close to 90 per cent of ingot capacity, and the foremost independent at 80 to 85 per cent, a rate which it is said cannot be increased, even though business warranted it, until the completion about April 1 of a fourth blast furnace now under construction.

Local mills report that both new business and specifications are in excess of the ability of mills to ship. Sales during February were in larger volume than during January, some of the improvement being attributed to buying by industrial companies. Within the week over 15,000 tons of structural steel has been added to mill books. One important project calls for 5000 tons and several others average 1500 tons each.

In car buying February exceeded January by 50 per cent. Railroads placed 8500 cars in January and 12,300 in the month just closed. Of the latter number 8500 will be built in Western shops. Car builders are complaining bitterly of prices obtained on recent contracts. An order just placed for 2100 drop-door coal cars brought makers an average of $2,400 per car, and several hundred ordinary steel gondolas were taken at an average price of $2,000 per car.

Pig iron shipments continue at a high rate and production by strictly merchant furnaces has been increased by the relighting of the Federal furnace, which was taken out for repairs early in February. The active furnaces in this district now include two Iroquois, two Federal, one Mayville, the Zenith stack and the Thomas furnace.

Pig Iron.—Sales recently made by local producers in territory outside of Chicago at prices said to have been $2 below local quotations have caused buyers to believe that the Chicago market has lost strength. A number of large users who are known to be on the verge of entering the market are still hesitating, with the result that no actual test of prices has been made. Sales recorded during the week are of carlot size and brought producers the full schedule of $23, base furnace. Shipments from local furnaces in February, when averaged on a daily basis, were slightly larger than in January. Moreover, deliveries in the first two months of this year were heavier than in the corresponding period of 1925. The Federal furnace, which was blown out for repairs several weeks ago, has been lighted again. This is not looked upon as an increase in production due to demand, but simply as a shifting of output from an Indiana Harbor steel works furnace to a strictly merchant stack. A local user is inquiring for 500 tons of foundry, and a melter east of Chicago wants 500 tons of malleable. Several carlot sales of charcoal iron are reported at $29.04, delivered. Silvery is quiet, the week having brought out only one inquiry for about 100 tons.

Quotation on Northern foundry, high phosphorus and malleable iron are f.o.b. local furnace, and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards.

Northern No. 2 foundry, sil. 1.75 to 2.25		$23.00
Northern No. 1 foundry, sil. 2.25 to 2.75		23.50
Malleable, not over 2.25 sil.		23.00
High phosphorus		23.00
Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago		29.04
Southern No. 2 (all rail)	$27.61 to	28.01
Southern No. 2 (barge and rail)	26.18 to	27.18
Low phos., sil. 1 to 2 per cent, copper free	31.20 to	31.70
Silvery, sil. 8 per cent		35.29
Ferrosilicon, 14 to 16 per cent		48.79

Ferroalloys.—This market is almost without features. The only sale reported was four carloads of 80 per cent ferromanganese, which brought the full schedule of $115, seaboard, or $122.56, delivered.

We quote 80 per cent ferromanganese, $122.56, delivered Chicago; 50 per cent ferrosilicon, $85, delivered; spiegeleisen, 18 to 22 per cent, $41.76, delivered Chicago.

Plates.—Approximately 30,000 tons of steel will be required for 2800 hopper cars, 2300 of which have been placed by the Illinois Central and 500 by the Chicago & Eastern Illinois. There now remain about 6000 cars on inquiry, for which the bulk of the steel will probably come to the Chicago market. The Rock Island car program, which would have called for nearly 30,000 tons of plates, shapes and bars, has been indefinitely postponed. Oil storage tanks placed within the week totaled 8000 tons. Inquiry remaining before the trade is not more than 2000 tons, although reports are persistent that Western oil producers are shaping programs for storage tanks which will require a large tonnage of plates. Eastern mills which recently penetrated this market, largely on offerings of earlier deliveries than could be made by local mills, are in a number of instances not fulfiling their promises. This is particularly true of carload and mixed lot shipments.

The mill quotation is 2.10c., Chicago. Jobbers quote 3.10c. for plates out of stock.

Bars.—Demand for soft steel bars shows little change, and mills report that both new business and specifications remain at about the level of the previous week. Rolling schedules are now extended for at least 30 days, and earlier delivery cannot be made unless users' requirements coincide with mill programs. Mill prices are unchanged at 2.10c., Chicago. Makers of bar iron are encouraged over the volume of new business placed with them during the week. In fact, the tonnage booked is the largest for any like period in many months. The bulk of this business comes from the railroads, although car builders and makers of farm implements are also buying more freely. Bar iron is well established at 2c., Chicago. An improvement in the rate of automobile production has quickened the demand for alloy steel bars, which are unchanged in price. Makers of rail steel bars are busy, and are operating with a backlog of about six weeks. The largest demand at the moment is for fence posts since the fencing season will open within the next 30 days.

Mill prices are: Mild steel bars, 2.10c., Chicago; common bar iron, 2c., Chicago; rail steel bars, 2c., Chicago.

Jobbers quote 3c. for steel bars out of warehouse. The warehouse quotations on cold-rolled steel bars and shafting are 3.60c. for rounds and hexagons and 4.10c. for flats and squares; 4.15c. for hoops and 3.65c. for bands.

Jobbers quote hard and medium deformed steel bars at 2.60c., Chicago warehouse.

Structural Material.—Structural awards to local fabricators, totaling 8000 tons for the week, show marked improvement. Building activity in Chicago bids fair to remain at a high level, since building permits are running about 10 per cent ahead of the corresponding period of last year. The outstanding award of the week is 5000 tons for an addition to the Crawford Avenue Power Station of the Commonwealth Edison Co. Two other lettings call for approximately 1500 tons each. Fabricators complain that prices obtained are unsatisfactory, remaining on the same level that prevailed throughout the fall and winter months. Although there has been a rather determined effort to obtain better prices, the distribution of lettings appears to be unbalanced with the result that some shops are still in need of tonnage. Fabricators have been holding stocks close to actual requirements and do not show any tendency to deviate from that policy.

The mill quotation on plain material is 2.10c., Chicago. Jobbers quote 3.10c. for plain material out of warehouse.

Wire Products.—Business in general continues good, although spotty. Makers believe that severe storms, such as were recently experienced along the Atlantic seaboard, are in large measure responsible for this situation. It is rather openly admitted, however, that the prices of farm products are having some bearing on demand. The South and Southwest appear to be less

affected than other sections, and business emanating from those districts is in good volume. A strong point in the market is that stocks in the hands of dealers and jobbers and at the mills are low, and the general feeling is that a substantial buying movement will get under way late in March and will extend through April and May. From present indications the manufacturing trade will specify fully for the first quarter. February shipments from mills ran a little ahead of January, but were not so heavy as in the same month last year.

We quote warehouse prices f.o.b. Chicago: No. 8 black annealed wire, $3.30 per 100 lb.; common wire nails, $3.05 per keg; cement-coated nails, $2.05 to $2.20 per count keg.

Rails and Track Supplies.—Rail mills continue to operate at capacity, but deliveries are still lagging behind shipment dates specified in contracts. Miscellaneous lots of standard section rails have added 8000 tons to makers' books. New tie plate business emanating from various sources totaled to 18,000 tons for the week. Specifications against iron tie plate contracts are liberal, and makers report that a substantial tonnage still remains on their books. Steel tie plates show no signs of advancing above the current quotation of 2.25c., mill.

Standard Bessemer and open-hearth rails, $43; light rails, rolled from billets, $36 to $38 per gross ton, f.o.b. maker's mill.

Standard railroad spikes, 2.90c. to 3c., mill; track bolts with square nuts, 3.90c. to 4c., mill; steel tie plates, 2.25c., f.o.b. mill; angle bars, 2.75c., f.o.b. mill.

Jobbers quote standard spikes out of Chicago warehouse at 3.55c., base, and track bolts, 4.55c., base.

Cast Iron Pipe.—This market shows more activity and a number of new inquiries are now before the trade. Mishawaka, Ind., will take bids March 8 on 550 tons of Class C pipe in sizes ranging from 6-in. to 16-in. On March 2 Evanston, Ill., will receive tenders on 430 tons of 6 and 10-in. Class B. pipe, and Grant Park, Ill., is asking for prices on 700 tons of 2-in. to 14-in. Class B. Little Chute, Wis., is advertising for 250 tons of 6, 8, and 10-in. Class B pipe, and Mundelein, Ill., will take prices on 250 tons of 6 and 8-in. Class B. The city of Chicago will take bids this week on 5600 tons of 30 to 48-in. Class B pipe. James B. Clow & Sons were low bidder witn $40.85, base Birmingham, on 500 tons of pipe for Flint, Mich. The Chicago market remains unchanged at $41 to $42, base Birmingham, or $49.20 to $50.20, delivered, for 6-in. and larger pipe. Deliveries on 6-in. pipe range from four to five weeks.

We quote per net ton, delivered Chicago, as follows: Water pipe, 4-in., $53.20 to $54.20; 6-in. and over, $49.20 to $50.20; Class A and gas pipe, $4 extra.

Sheets.—Chicago makers have opened books on second quarter business at the prices of late November. These prices, f.o.b. Chicago district mills, are 3.45c. for black, 2.60c. for blue annealed and 4.70c. for galvanized. Buying during the week was in small tonnages, it being apparent that consumers are not yet ready to make known their second quarter requirements. Although many contracts expiring about April 1 were closed at $2 below present quotations, makers do not feel that any great resistance will be encountered on contracts soon to be signed, for the reason that a considerable tonnage has already been taken at the present price level. Specifications are slightly more liberal, and mills have gained a week's backlog. February proved to be a better month than January from the standpoint of shipping orders. Last year just the reverse was true, the second month's rollings having been below those of January. Mills continue to operate at close to capacity and are scheduled to the end of the quarter.

Chicago delivered prices from mill are 3.50c. for No. 28 black, 2.65c. for No. 10 blue annealed and 4.75c. for No. 28 galvanized. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

Jobbers quote f.o.b. Chicago: 3.50c. base for blue annealed, 4.10c. base for black, and 5.25c. base for galvanized.

Reinforcing Bars.—The week brought out a good tonnage of new inquiries, although most of them call for 40 to 50 tons, or less. Actual lettings are slow in materializing, with the result that dealers are fairly well loaded down with pending business, which from present indications will be placed in the early spring. Illinois State road work, which will require about 800 tons of steel, has been awarded to contractors, but bar dealers have not yet been asked for figures. Billet steel reinforcing bars are still quoted at 2.60c., Chicago warehouse.

Billets.—Local mills have booked 6000 tons of small billets at $35 per gross ton, Chicago.

Bolts, Nuts and Rivets.—Specifications for February were slightly in excess of those for the previous month and are somewhat higher than for February last year. Prices remain unchanged, and sellers believe current quotations will be carried on second quarter contracts, which are now in the course of preparation. Specifications from the manufacturing trade are liberal and will, for the most part, cover all the material contracted for. Jobbers, on the other hand, are moving cautiously and appear to be keeping stocks at a minimum.

Jobbers quote structural rivets, 3.50c. per lb.; boiler rivets, 3.70c. per lb.; machine bolts up to ⅞ x 4 in., 50 and 5 per cent off; larger sizes, 50 and 5 off; carriage bolts up to ⅞ x 4, 47½ off; larger sizes, 47½ off; hot-pressed nuts, square, tapped or blank, $3.25 off; hot-pressed nuts, hexagons, tapped or blank, $3.75 off; coach or lag screws, 55 and 5 per cent off.

Old Material.—This market is without definite trend, and although here and there a spark of optimism is found, the trade, as a general rule, hesitates to commit itself for the future. Large users appear to have no interest in the market beyond making offers. These are usually unattractive, and dealers are paying little attention to them. Material which comes out from day to day appears to be about in keeping with the demand, which is of carlot proportions. Railroads and country dealers have taken advantage of the open winter in this district and have shipped almost without interruption. This is considered favorable to a better market condition for the reason that this spring will probably not bring out the flood of scrap which is usually released with the termination of cold weather. There is a growing interest as to the actual extent of stocks in the hands of users. It is believed in some quarters that many melters will purchase their scrap materials in close conformity with actual requirements and that at present they are liquidating stocks to conform with this new policy of buying. At the moment there is a stiffening in the price of low phosphorus punchings, the supply of which is inadequate to meet the demand.

We quote delivered in consumers' yards, Chicago and vicinity, all freight and transfer charges paid for all items except relaying rails, including angle bars to match, which are quoted f.o.b. dealers' yards:

Per Gross Ton	
Iron rails	$16.50 to $17.00
Cast iron car wheels	17.00 to 17.50
Relaying rails, 56 lb. to 60 lb.	25.00 to 26.00
Relaying rails, 65 lb. and heavier	26.00 to 31.00
Forged steel car wheels	18.00 to 18.50
Railroad tires, charging box size	18.00 to 18.50
Railroad leaf springs, cut apart	18.00 to 18.50
Rails for rolling	16.50 to 17.00
Steel rails, less than 3 ft.	17.50 to 18.00
Heavy melting steel	13.75 to 14.25
Frogs, switches and guards, cut apart	15.50 to 16.00
Shoveling steel	13.75 to 14.00
Drop forge flashings	11.00 to 11.50
Hydraulic compressed sheets	12.25 to 12.75
Axle turnings	15.25 to 15.75
Steel angle bars	16.50 to 17.00
Steel knuckles and couplers	17.00 to 17.50
Coil springs	18.50 to 19.00
Low phos. punchings	17.50 to 18.00
Machine shop turnings	8.75 to 9.25
Cast borings	11.75 to 12.25
Short shoveling turnings	11.75 to 12.25
Railroad malleable	17.75 to 18.25
Agricultural malleable	16.50 to 17.00
Per Net Ton	
Iron angle and splice bars	15.75 to 16.25
Iron arch bars and transoms	20.50 to 21.00
Iron car axles	25.00 to 25.50
Steel car axles	17.50 to 18.00
No. 1 busheling	11.00 to 11.50
No. 2 busheling	8.75 to 9.25
Pipes and flues	10.00 to 10.50
No. 1 railroad wrought	12.75 to 13.25
No. 2 railroad wrought	12.25 to 12.75
No. 1 machinery cast	17.00 to 17.50
No. 1 railroad cast	15.50 to 16.00
No. 1 agricultural cast	15.50 to 16.00
Locomotive tires, smooth	16.50 to 17.00
Stove plate	14.50 to 15.00
Grate bars	13.00 to 13.50
Brake shoes	12.50 to 13.00

San Francisco

Steel for Penstock Split Between Local and German Firms

SAN FRANCISCO, Feb. 26 (*By Air Mail*).—Outstanding among developments of the week has been an award of 3500 tons of steel for a penstock for the Feather River Power Co., San Francisco, which was divided between the Ferrum company of Germany and the Western Pipe & Steel Co. of California. The German firm is understood to have taken 60 per cent of the tonnage at a low figure. Fresh inquiries for structural material and plates call for a total of 11,757 tons of steel. General buying shows signs of expanding. With the exception of plates, quotations in most departments of the market are firm. The Southern Pacific Co., San Francisco, has purchased 23 locomotives of the three-cylinder type, for delivery May 31, from the American Locomotive Co., Schenectady, N. Y.

Local importers are interested in reports that uniform prices for export on seamless pipe have been agreed upon by the five producing nations of continental Europe, and that France, Luxemburg and Belgium have established a base of 340 fr. at Antwerp (about $15.40) for foundry iron. Relatively little Belgian iron is being bought by local users, primarily because it contains too high a percentage of phosphorus. At $15.40, Antwerp, it is estimated that Belgian foundry iron can now be laid down at Pacific Coast ports for about $22 a ton, duty paid. Neither the price nor the quality, however, seems to be attractive to local buyers.

Pig Iron.—During the week two local importers have received the following: 100 tons of special analysis foundry iron from England, and 354 tons of special analysis iron from India. A large local melter is understood to have contracted for a moderate tonnage of German iron to be delivered at regular intervals. Of all the foreign irons being offered by local importers, the German and Indian are most in demand. Domestic foundry is selling well, although current sales in both domestic and foreign irons are confined to small tonnages. Ruling prices follow:

*Utah basic	$27.00 to $28.00
*Utah foundry, sil. 2.75 to 3.25	27.00 to 28.00
**English foundry, sil. 2.75 to 3.25	25.00 to 26.00
**Belgian foundry, sil. 2.75 to 3.25	24.00
**Dutch foundry, sil. 2.75 to 3.25	24.00
**Indian foundry, sil. 2.75 to 3.25	24.00 to 25.00
**German foundry, sil. 2.75 to 3.25	24.00
**Chinese foundry, sil. 3 to 3.50	25.50

*Delivered San Francisco.
**Duty paid, f.o.b. cars San Francisco.

Shapes.—Lettings of fabricated steel total 2450 tons. Fresh inquiries call for about 7700 tons. The two largest individual jobs reported closed are 800 tons for a theater in Los Angeles, taken by the Llewellyn Iron Works of that city, and 700 tons for a theater in San Diego, awarded to the Moore Dry Dock Co., Oakland. A Scottish Rite Temple in Oakland calls for 1100 tons, and bids have closed on 2500 tons for a smelter at Douglas, Ariz. The Boulevard Hotel, Oakland, which will require 2400 tons, is expected to be let within the next two or three weeks. Eastern mill quotations continue firm at 2.35c., c.i.f. Coast ports.

Plates.—While most of the Eastern mills continue to name 2.30c., c.i.f. Coast ports, on the majority of jobs that come up for figures, there have been evidences during the week that 2.25c. is being quoted. The Union Oil Co., Los Angeles, is taking bids on 2020 tons for tanks, the city of Los Angeles closes bids today on a penstock job that will require 1500 tons, and it will open bids March 2 for 212 tons called for under Specification 789-C. The city of Tacoma, Wash., will close bids March 27 on 300 tons for a pipe line.

Bars.—The outstanding letting of the week is 650 tons for the East Bay Municipal Utility District, Oakland, taken by the Truscon Steel Co. Local reinforcing bar jobbers continue to quote as follows: 2.80c., base, per lb., on lots of 250 tons; 2.95c., base, on carload lots, and 3.20c., base, on less than carload lots.

Cast Iron Pipe.—The city of Arcadia, Cal., has awarded 106 tons to B. Nicoll & Co., and the city of Bellingham, Wash., has placed 733 tons with the United States Cast Iron Pipe & Foundry Co. The city of Portland will open bids shortly on 5850 tons, Laguna Beach will close bids March 2 on 3610 tons, Los Angeles will close bids March 5 on 3088 tons, and the North Sacramento Light & Water Co. has closed bids on about 120 tons. Quotations are unchanged at $50 to $52, base, water shipment, San Francisco.

Rails and Tracks Supplies.—The Key System Transit Co., Oakland, has placed 100 tons of 90-lb. rails with the United States Steel Products Co. Plans are being prepared by the engineering department of the Santa Fe System for rail changes, water lines, pumps, wells, dams, double tracking, etc., in Arizona, which will call for an expenditure of about $5,500,000. More than $2,000,000 of this, it is understood, will be used for rail changes. Plans are also being made by the Santa Fe for the construction of a bridge over Kings River near Centerville, Cal., and for 3½ miles of new railroad in connection with this project.

Warehouse Business.—Jobbers report somewhat heavier buying. Business this month has been about equal in volume to that of February a year ago. Quotations are unchanged.

Local warehouse prices, per 100 lb., are as follows: Merchant bars, $3.30 base; merchant bars, ⅝ in. and under, rounds, squares and flats, $3.80 base; soft steel bands, $4.15 base; angles, ¼ in. and larger x 1½ in. to 2¾ in., incl., $3.30 base; channels and tees, ¾ in. to 2¾ in., incl., $3.90 base; angles, beams and channels, 3 in. and larger, $3.30 base; tees, 3 in. and larger, $3.30 base; universal mill plates, ¼ in. and heavier, stock lengths, $3.30 base; spring steel, ¼ in. and thicker, $6.30 base; wire nails, $3.50 base; cement coated nails, $3 base; No. 10 blue annealed sheets, $3.75; No. 28 galvanized sheets, $6; No. 28 black sheets, $4.75.

Nails.—A shipment of 1200 kegs from Antwerp has been received by a local firm during the week.

Coke.—A local importer has received 4000 tons of English coke during the week which will be distributed among users in Seattle, Los Angeles and San Francisco. Current sales are small. The Southern Pacific Co. has not yet placed its recent inquiry. Importers quote as follows:

English beehive, $15 to $16 per ton at incoming dock, and English by-product, $12 to $14; German by-product, $11.50 to $12.

St. Louis

Plates Bought for Oil Fields—Sale of 4000 Tons of Pig Iron

ST. LOUIS, March 2.—The principal pig iron transaction of the week was a sale by the St. Louis Coke & Iron Corporation of 4000 tons of foundry for second quarter shipment to a specialty maker in the district. A few small lots constituted the other sales. No inquiries of consequence are pending. Melters in the district generally are covered for the remainder of this quarter, and are showing only casual interest in their second quarter's requirements. The Federal Reserve Bank of St. Louis reports that the melt in the district during January was about on a parity with the corresponding month in 1925, but slightly under the December, 1925, total. Jobbing plants, especially those specializing in gray iron castings, report a sharp falling off in new orders. Prices are nominally unchanged.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices, $2.16 freight from Chicago, $4.42 from Birmingham, all rail, and 81c. average switching charge from Granite City:

Northern fdy., sil. 1.75 to 2.25	$25.16
Northern malleable, sil. 1.75 to 2.25	25.16
Basic	25.16
Southern fdy., sil. 1.75 to 2.25	$26.42 to 27.92
Granite City iron, sil. 1.75 to 2.25	24.31 to 24.81

Coke.—The demand for domestic coke has eased up considerably since the settlement of the anthracite strike, but there is a good call for foundry grades.

Finished Iron and Steel.—Reports from the Mid-Continent oil fields tell of the placing of 1500 tons of tank plates for the Magnolia Petroleum Co. with the

Illinois Steel Co. and the division of 1300 tons for the Gulf Refining Co. among the Bethlehem Steel Co., Lukens Steel Co. and Worth Steel Co. First quarter prices on black, blue annealed and galvanized sheets have been reaffirmed for second quarter. This step is expected to develop some business among users who have been waiting for lower prices.

The general manufacturing demand for iron and steel goods from store has receded somewhat. The Laclede Steel Co. has been awarded 80 tons of reinforcing bars for an addition to the Forest Park Hotel, St. Louis. The railroads are placing business sparingly, recent purchases covering only such materials as they are absolutely obliged to have.

For stock out of warehouse we quote: Soft steel bars, 3.15c. per lb.; iron bars, 3.15c.; structural shapes, 3.25c.; tank plates, 3.25c.; No. 10 blue annealed sheets, 3.60c.; No. 28 black sheets, cold rolled, one pass, 4.60c.; galvanized sheets, No. 28, 5.70c.; black corrugated sheets, 4.65c.; galvanized, 5.75c.; cold-rolled rounds, shafting and screw stock, 3.75c.; structural rivets, 3.65c.; boiler rivets, 3.85c.; tank rivets, $\frac{7}{8}$-in. diameter and smaller, 70 per cent off list; machine bolts, 55 per cent; carriage bolts, 50 and 5 per cent; lag screws, 55½ per cent; hot-pressed nuts, square, $3.25 off list; hexagon, blank or tapped, $3.75 off list.

Old Material.—A leading consumer in this district has bought 6000 tons of heavy melting steel at $14.75. The order was divided among four or five dealers here. This transaction has had a depressing effect on the market. On the other hand, specialties are higher as a result of the placing of a large order by an east side consumer last week. Railroad lists include: Baltimore & Ohio, 16,000 tons; Chicago & Western Indiana, 450 tons; Big Four lines, 3000 tons; Pennsylvania System, 37,500 tons; St. Louis-San Francisco, 500 tons, and Missouri Pacific, 400 tons.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton	
Iron rails	$13.00 to $13.50
Rails for rolling	16.00 to 16.50
Steel rails less than 3 ft.	17.00 to 17.50
Relaying rails, 60 lb. and under	24.00 to 25.00
Relaying rails, 70 lb. and over	30.00 to 31.00
Cast iron car wheels	17.25 to 17.75
Heavy melting steel	14.00 to 14.50
Heavy shoveling steel	14.00 to 14.50
Frogs, switches and guards cut apart	15.50 to 16.00
Railroad springs	17.25 to 17.75
Heavy axle and tire turnings	11.00 to 11.50
No. 1 locomotive tires	16.50 to 17.00
Per Net Ton	
Steel angle bars	13.50 to 14.00
Steel car axles	17.75 to 18.25
Iron car axles	22.50 to 23.00
Wrought iron bars and transoms	19.50 to 20.00
No. 1 railroad wrought	11.50 to 12.00
No. 2 railroad wrought	12.50 to 13.00
Cast iron borings	9.50 to 10.00
No. 1 busheling	10.50 to 11.00
No. 1 railroad cast	14.75 to 15.25
No. 1 machinery cast	16.50 to 17.00
Railroad malleable	13.50 to 14.00
Machine shop turnings	6.75 to 7.25
Bundled sheets	7.50 to 8.00

Cincinnati

Melters Count on Lower Pig Iron—Steel Specifications Disappointing

CINCINNATI, March 2.—Demand for pig iron is at the lowest point in the past year. Consumers, believing that there is no possibility of a price advance because of the reestablishment of the coke market on a normal basis and because of heavy pig iron production, are waiting to see whether they can secure their second quarter requirements for 50c. a ton less than the prevailing market. While there has been no change in the quotation of southern Ohio iron, which is selling at $21, base Ironton, the appearance of an attractive inquiry would probably bring out a lower price. Trade in Tennessee iron is lagging, but quotations remain at $21.50, base Birmingham. At least one Alabama furnace will take second quarter tonnage at $22, base Birmingham. With Ironton iron being delivered in Cincinnati for $22.89, there is little opportunity for Alabama iron, costing $2.80 a ton more delivered here, to move into this territory in sizable quantities. Jackson County silvery iron is quiet. The Dayton Steel Foundry Co., Dayton, Ohio, has purchased 1000 tons of low phosphorus iron. A local dealer has sold approximately 2000 tons of Southern charcoal iron in the Pittsburgh district. The Lunkenheimer Co., Cincinnati, is in the market for 200 tons each of foundry and low phosphorus iron.

Based on freight rates of $3.69 from Birmingham and $1.89 from Ironton, we quote f.o.b. Cincinnati:

Alabama fdy., sil. 1.75 to 2.25 (base)	$25.69
Alabama fdy., sil. 2.25 to 2.75	26.19
Tennessee fdy., sil. 1.75 to 2.25	25.19
Southern Ohio silvery, 8 per cent	32.39
So. Ohio fdy., sil. 1.75 to 2.25	22.89
Southern Ohio, malleable (nominal)	22.89

Coke.—The movement of by-product foundry coke in February paralleled that in January, while domestic consumption showed a slight loss. Foundries in this territory have increased their melt in the past month, and specifications of by-product foundry in March are expected to be liberal. Prices are unchanged, with by-product foundry and domestic grades selling at $10.64 and $8.64, delivered in Cincinnati, respectively. Wise County furnace coke can now be obtained for $4, ovens, and sales have been restricted to unimportant lots. Connellsville furnace grades have been quoted as low as $3.75, ovens. Several dealers state that the call from nearby consumers for prompt shipment of both foundry and furnace coke has continued at a surprisingly good rate in view of the settlement of the anthracite strike.

Based on freight rates of $2.14 from Ashland, Ky., $3.53 from Connellsville, and $2.59 from Wise County ovens and New River ovens, we quote f.o.b. Cincinnati: Connellsville foundry, $8.53 to $9.53; Wise County foundry, $8.09 to $8.59; New River foundry, $9.59 to $10.09; by-product foundry, $10.64.

Reinforcing Bars.—Signs of expanding activities are in evidence. Awards are still confined to jobs involving small tonnages, but the outlook is favorable for several attractive lettings in March. Prices are steady with new billet bars selling at 2c., Cleveland, and rail steel bars at 1.90c., mill.

Warehouse Business.—Cold weather and frequent snow storms interfered seriously with construction work during February and the business of local jobbers suffered accordingly. In several cases the month showed a gain in the volume of orders over January, but the total tonnage was light. Quotations are unchanged.

Cincinnati jobbers quote: Iron and steel bars, 3.30c. per lb.; reinforcing bars, 3.30c.; hoops, 4c. to 4.25c.; bands, 3.95c.; shapes, 3.40c.; plates, 3.40c.; cold-rolled rounds and hexagons, 3.85c.; squares, 4.35c.; open-hearth spring steel, 4.75c. to 5.75c.; No. 10 blue annealed sheets, 3.60c.; No. 28 black sheets, 4.10c. to 4.30c.; No. 28 galvanized sheets, 5.25c. to 5.40c.; No. 9 annealed wire, $3 per 100 lb.; common wire nails, $2.95 per keg base; cement coated nails, $2.25 per keg; chain, $7.55 per 100 lb. base; large round head rivets, $3.75 base; small rivets, 65 per cent off list. Boiler tubes, prices net per 100 ft., lap-welded steel tubes, 2-in., $18; 4-in., $38; seamless, 2-in., $19; 4-in., $39.

Finished Material.—Failure of consumers to specify the total amount of material for which they had contracted cut into the February bookings to such an extent that the month showed a loss of about 10 per cent compared with January. However, several district offices of Eastern mills state that specifications and orders in the first two months of 1926 have been about 15 per cent ahead of the same period last year. The small amount of business in February is attributed to the unfavorable weather and to the fact that consumers bought abnormally large tonnages in the last quarter of 1925, thereby accumulating considerable stock upon which they have been drawing for their current requirements. At present the majority of buyers have little material on hand, but are not inclined to come into the market for sizable lots. Sales of bars have been only fair and prices are firm at 2c., base Pittsburgh. Plates are bringing 1.85c., base Pittsburgh, although a few orders have been taken at 1.80c. Structural shapes are quoted at 1.90c., base Pittsburgh, but the demand has been negligible. Sheet mills are stiffening in their attitude and are unwilling to contract for second quarter at less than 4.60c., base Pittsburgh, for galvanized, 2.50c. for blue annealed, 3.35c. for black

and 4.40c. for automobile body sheets. One nearby producer of sheets is operating at 80 per cent of capacity, while another company is maintaining a 90 per cent schedule. The wire market is weak, and consumers are slow in closing for their spring requirements. Common wire nails are selling at $2.65 per keg, Pittsburgh or Ironton, and plain wire at $2.50 per 100 lb., Pittsburgh or Ironton. Fabricators have little work ahead of them, and unless there is an increase in lettings they will have to curtail their present operations.

Old Material.—Curtailment of mill operations in this territory has had a depressing effect upon the market. The inactivity of many items is reflected in prices, which have dropped off 50c. a ton. However, heavy melting steel continues for the moment at $13. Sales of No. 1 machinery cast have been consistently good, because of an expansion of foundry production. The Big Four has a list closing today which totals 3000 tons, including 1000 tons of heavy melting steel and 750 tons of rails.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

	Per Gross Ton	
Heavy melting steel		$13.00
Scrap rails for melting	$13.00 to	13.50
Short rails	18.00 to	18.50
Relaying rails	27.00 to	27.50
Rails for rolling	14.00 to	14.50
Old car wheels	12.50 to	13.00
No. 1 locomotive tires	16.50 to	17.00
Railroad malleable	15.50 to	16.00
Agricultural malleable	14.50 to	15.00
Loose sheet clippings	8.00 to	9.00
Champion bundled sheets	10.00 to	10.50
	Per Net Ton	
Cast iron borings	8.00 to	8.50
Machine shop turnings	7.00 to	7.50
No. 1 machinery cast	19.00 to	19.50
No. 1 railroad cast	14.50 to	15.00
Iron axles	22.00 to	22.50
No. 1 railroad wrought	10.00 to	10.50
Pipes and flues	8.50 to	9.00
No. 1 busheling	9.50 to	10.00
Mixed busheling	8.00 to	8.50
Burnt cast	8.50 to	9.00
Stove plate	9.50 to	10.00
Brake shoes	10.00 to	10.50

Birmingham

Cast Pipe Declines to $40—French Billets Delivered Via Warrior River

BIRMINGHAM, March 2.—Pig iron buying has continued steadily, and the aggregate business now booked for second quarter delivery convinces Alabama furnaces that there will be a real need for all the iron that can be made during that period. Prices are being maintained at $22 per ton, Birmingham, for No. 2 foundry, with $23 being asked for small tonnages. Spot iron is not so easily obtained as a short time ago since some of the furnaces have a large quantity of iron due consumers. Larger consumers of iron in this territory have been watching the market and, although they are acting quietly, some buying has been done, it is learned. Production is the same as it has been for the past two weeks, with two furnaces under repairs and nearing completion. Fourteen blast furnaces are making foundry iron in this State, nine basic and two ferromanganese and mold iron. Better feeling prevails among local consumers, and indications point to a high rate of activity into the third quarter.

We quote per gross ton, f.o.b. Birmingham district furnaces, as follows:

No. 2 foundry, 1.75 to 2.25 sil.	$22.00
No. 1 foundry, 2.25 to 2.75 sil.	22.50
Basic	22.00
Charcoal, warm blast	$30.00 to 32.00

Rolled Steel.—Practically every form of steel is in good demand, and operations of mills and fabricating plants are practically at capacity. An unusual coincidence of the past week was the fact that while 2000 tons of rails bound for Central America and several hundred tons of bars for a warehouse in New Orleans were moving down the Warrior River from the Ensley mills, 500 tons of the third shipment of 2000 tons of billets from France was bound up-river for use at the band, cotton tie and hoop mills of the Connors Steel Co. in Birmingham. Railroad purchases in the Birmingham district during the past few months insure steady mill operations for some time to come. Fabricating plants also report good business. The Reeves Brothers Co., a local steel plate fabricating shop, has just completed two 110-ton steel creosoting retorts for the W. P. Brown & Sons Lumber Co. at Red Valley, Ala. Soft steel continues to range from 2.15c. to 2.25c. base, Birmingham, structural shapes from 2.05c. to 2.15c., and plates, 1.95c. to 2.05c.

Cast Iron Pipe.—The general quotation on cast iron pressure pipe both for first and second quarter deliveries is now $40, Birmingham, for 6-in. and large diameters. Pipe plants are shipping and producing practically at capacity and with spring buying getting under way, a continuance of good operations seems assured. Specifications during the first two months of the year were heavier than in the same period a year ago. The new centrifugal pipe plant of the American Cast Iron Pipe Co. will not be ready for steady operations for 60 days. Demand for soil pipe and fittings has improved and output has increased.

Coke.—Foundry coke has declined 25c. a ton to $5.50, Birmingham, on quantity purchases. Small lots are bringing as high as $6. Demand has lost some of its urgency, but by-product plants are still operating at close to capacity without accumulating much coke in their yards. Current reports point to an increase in by-product capacity in this district.

Old Material.—The market is weak and heavy melting steel has declined $1 a ton. One of the larger consumers of this grade has ceased buying for the time being. Railroad wrought and rails for rolling have also declined. Considerable material continues to be delivered against old contracts, but little new business is being placed.

We quote per gross ton, f.o.b. Birmingham district yards, as follows:

Cast iron borings, chemical	$15.00 to $16.00
Heavy melting steel	13.00 to 14.00
Railroad wrought	12.00 to 13.00
Steel axles	19.00 to 20.00
Iron axles	18.00 to 19.00
Steel rails	14.00 to 14.50
No. 1 cast	17.00 to 17.50
Tramcar wheels	17.00 to 17.50
Car wheels	16.00 to 16.50
Stove plate	14.00 to 14.50
Machine shop turnings	8.00 to 8.50
Cast iron borings	8.00 to 9.00
Rails for rolling	15.00 to 16.00

Youngstown

Expansion in Steel Making — Improved Interest in Pig Iron

YOUNGSTOWN, March 2.—Shipments by Mahoning Valley independents compared favorably for February with January. Buying and specifications are still somewhat sporadic.

Some betterment in production is manifest this week, the Youngstown Sheet & Tube Co. reporting an 85 per cent operating rate, comparing with 80 per cent for several weeks. The Republic Iron & Steel Co. continues at 75 per cent, but has added an open hearth furnace. Steel ingot production shows progressive improvement in the district. Two weeks ago 37 independent open hearth furnaces in this district were in operation, last week 39 and this week 41.

All of the Valley independents are following the price lead of the American Sheet & Tin Plate Co. for second quarter shipments. Specifications are still marked by some irregularity. The Falcon Steel Co. at Niles suspended this week its eight-mill sheet plant; in spite of this suspension, however, 110 of the 127 Valley mills were scheduled at the beginning of the week. Flood waters of the Mahoning River, inundating the pits at the Newton Falls plant of the Newton Steel Co. last week, caused a few days' suspension, but production was resumed Sunday evening.

There is broader demand from the automobile trade for hot strip, accounting for virtually capacity operations.

Machinery having been received, work starts this week changing the 90-in. plate mill of the Republic

Iron & Steel Co. into an 84-in. plate and a 60-in. universal mill. This alteration will require six weeks.

Second quarter pig iron inquiries are developing in larger way than heretofore, and are expected to gather strength as March progresses. Settlement of the anthracite coal strike will result in a number of blast furnace resumptions in this district. The Youngstown Sheet & Tube Co., Carnegie Steel Co., Republic Iron & Steel Co., A. M. Byers Co. and the Reliance Coal & Coke Co. are expected to start stacks either banked or cold during the next 60 days.

Furnace coke has been purchased here as low as $3.50 per ton, against a high of $11 and $12 during the last week of the anthracite strike.

Boston

Deadlock Between Pig Iron Buyers and Sellers—Coke Unchanged for March

BOSTON, March 2.—Foundries are more actively sounding out the market, but few are specifying their probable pig iron requirements. A St. Johnsbury, Vt., melter's inquiry for 1000 tons of No. 2X iron for second quarter is the only one of any size, but like other inquiries two weeks old or more, it gives no indication of closing immediately. Furnaces are holding prices steady; consequently it looks like an endurance test between buyer and seller. Current sales consist largely of small lots of imported iron, including Indian iron of 2.50 to 3 per cent silicon content at $23 a ton, on dock, duty paid; English of the same silicon, at $22, and higher silicon at $22.50, and Continental iron of 2.50 to 3.25 per cent silicon at $20.50 and $21. Belgian 2.50 to 3.25 per cent silicon iron is offered local brokers at $19.75, at dock, duty not paid, with lower silicon iron available at less money. A number of New England jobbing foundries report a decline in activity, but the aggregate weekly melt does not appear to be much smaller than it was a month ago.

We quote delivered prices on the basis of the latest sales as follows, having added $3.65 freight from eastern Pennsylvania, $4.91 from Buffalo, $5.92 from Virginia, and $9.60 from Alabama:

East. Penn., sil. 1.75 to 2.25	$25.65 to $26.15
East. Penn., sil. 2.25 to 2.75	26.15 to 26.65
Buffalo, sil. 1.75 to 2.25	25.91
Buffalo, sil. 2.25 to 2.75	26.41
Virginia, sil. 1.75 to 2.25	29.92
Virginia, sil. 2.25 to 2.75	30.42
Alabama, sil. 1.75 to 2.25	$31.60 to 32.60
Alabama, sil. 2.25 to 2.75	32.10 to 33.10

Cast Iron Pipe.—Hartford, Conn., opened bids March 1 for 800 tons of 6-in. to 30-in. pipe. Waterbury, Conn., has yet to close on 750 tons of 6-in. to 8-in. pipe. Ware, Mass., has awarded 100 tons of 8-in. pipe to R. D. Wood & Co. Contrary to earlier reports, Medford, Mass., has rejected both domestic and foreign foundry bids on 600 tons of 6-in. to 12-in. pipe, and today will take new bids. Boston is holding up the award of 2500 tons of 8-in. to 16-in. pipe, bids for which closed about a month ago. At that time it was expected that the pipe would be placed with the United States Cast Iron Pipe & Foundry Co. Prices on domestic pipe are reported firm, with concessions practically limited to large tonnages of 24-in. pipe and larger.

Coke.—The Providence Gas Co. announces that March specifications against first half foundry coke contracts will be on a basis of $13 a ton, delivered within a $2.52 freight rate zone, and the New England Coal & Coke Co. names the same price within a $3.10 freight rate zone, thereby continuing the prices which ruled in February. The latter company is selling spot egg coke for foundry heating at $11.25 a ton, ovens, as it did in February. Thus both coke makers are still ignoring the Connellsville coke prices, just as they did when Pennsylvania fuel prices were skyrocketing. Both are making remarkable records for foundry coke, but are still far behind on domestic coke deliveries. Anthracite prices are $1 a ton, or more, under the recent peak, but consumption is no greater because many continue to use by-product coke in preference.

Old Material.—Generally speaking, the scrap market remains dull; yet business the past week was somewhat heavier than for the previous week, both because of the accessibility of old material stocks with the disappearance of the snow, and the desire by some holders to lighten inventories. The trend of prices, however, is unmistakably downward. Most of the heavy melting steel bought recently for New England, as well as eastern Pennsylvania consumption, was at $11, on cars shipping point. On selected material, $11.25 might be done, which is the extreme top price, and a drop of 25c. a ton, as compared with a week ago. Early the past week machine shop turnings were bought at $9.10, but today the market is $8.50 to $9. The top price reported on chemical borings was $11.10, but buyers are now quoting $10.25 to $10.50. Current prices on other materials are off in proportion. The Boston & Albany Railroad closes bids March 5 on 50,000 lb. of No. 1 railroad cast; 50,000 lb. of No. 2 railroad cast; 50,000 lb. of knuckles; 500 net tons of heavy melting steel; 300 tons of No. 1 5-in. and 6-in. steel; 100,000 lb. of No. 2 turnings and drillings, and smaller lots of material.

The following prices are for gross-ton lots delivered consuming points:

Textile cast	$19.50 to $20.00
No. 1 machinery cast	19.00 to 19.50
No. 2 machinery cast	15.00 to 16.00
Stove plate	14.00 to 14.50
Railroad malleable	19.50 to 20.00

The following prices are offered per gross-ton lots, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	$11.00 to $11.25
No. 1 railroad wrought	13.00 to 13.50
No. 1 yard wrought	12.00 to 12.50
Wrought pipe (1 in. in diameter, over 2 ft. long)	10.50 to 11.00
Machine shop turnings	8.50 to 9.00
Cast iron borings, chemical	10.25 to 10.75
Cast iron borings, rolling mill	9.00 to 9.50
Blast furnace borings and turnings	8.00 to 8.50
Forged scrap	9.00 to 9.50
Bundled skeleton, long	9.00 to 9.50
Forged flashings	9.00 to 9.50
Bundled cotton ties, long	8.50 to 9.00
Bundled cotton ties, short	9.50 to 10.00
Shafting	17.50 to 18.00
Street car axles	17.50
Rails for rerolling	12.00 to 12.50
Scrap rails	11.00 to 11.50

Buffalo

Pig Iron Inquiry Improves—Sheet Mills Booked for 60 Days

BUFFALO, March 2.—In view of a revival of inquiry pig iron producers feel more cheerful than for many weeks. A total of 8000 to 10,000 tons is pending, including some sizable individual tonnages. One consumer wants 3000 tons of foundry. The General Electric Co. is said to be in the market for a round tonnage, possibly 2000 tons, and the Massey-Harris Co. is inquiring for 2000 tons of foundry and malleable. Two Eastern inquiries call for 500 and 600 tons of foundry iron, respectively, and two inquiries for 1000 tons of foundry are out. The market appears to be firm at $21, base furnace, and this is the price generally quoted for first and second quarter deliveries. One interest asks $22 for first quarter, but admits it cannot book much tonnage at that price.

We quote prices per gross ton, f.o.b. Buffalo, as follows:

No. 2 plain fdry., sil. 1.75 to 2.25	$21.00
No. 2X foundry, sil. 2.25 to 2.75	21.50
No. 1 foundry, sil. 2.75 to 3.25	22.50
Malleable, sil. up to 2.25	21.00
Basic	$20.50 to 21.00
Lake Superior charcoal	29.28

Finished Iron and Steel.—Market conditions are better than they have been for three or four weeks. Bars are firm at 2.265c., Buffalo, and shapes at 2.165c. The equivalent of 1.80c. to 1.90c., base Pittsburgh, is being asked on plates. Sheets are reasonably firm at 3.35c., base Pittsburgh, for black, and 4.60c. for galvanized. On present bookings local sheet mills can operate at close to capacity for at least 60 days. Demand for automobile sheets has declined. Specifications on bolts and nuts are good, with prices firm.

Warehouse prices are being quoted as follows: Steel bars, 3.30c. per lb.; steel shapes, 3.40c.; steel plates, 3.40c.; No. 10 blue annealed sheets, 3.90c.; No. 28 black sheets, 4.60c.; No. 28 galvanized, 5.75c.; cold-rolled shapes, 4.45c.; cold-rolled rounds, 3.95c.; wire nails, 3.90c.; black wire, 3.90c.

Old Material.—The bottom has dropped out of the market, and there is no demand, except for one commodity. A large foundry with plants in this district has become a buyer of stove plate with the result that this grade is the only one exhibiting any strength. Probably 10 dealers have orders for it at $15 to $15.25, a price almost as high as on heavy melting steel. All the available supply has been exhausted, and there are a number of short orders out. The general aspect of the market indicates that prices may go to the lowest levels in years. Mills say definitely that they are out of the market.

We quote prices per gross ton, f.o.b. Buffalo, as follows:

Heavy melting steel	$15.00 to $15.50
Low phosphorus	18.50 to 19.00
No. 1 railroad wrought	14.00 to 14.50
Car wheels	17.00 to 17.50
Machine shop turnings	11.00 to 11.50
Mixed borings and turnings	12.00 to 12.50
Cast iron borings	12.00 to 12.50
No. 1 busheling	14.00 to 14.50
Stove plate	15.00 to 15.25
Grate bars	13.00 to 13.50
Hand-bundled sheets	11.00 to 11.50
Hydraulic compressed	14.00 to 14.50
No. 1 machinery cast	15.50 to 16.00
Railroad malleable	18.50 to 19.00
No. 1 cast steel	17.00 to 17.50
Iron axles	24.00 to 25.00
Steel axles	16.00 to 16.50

New York

Foreign Iron Pressed for Sale—In Steel Bookings February Equals January

NEW YORK, March 2.—The pressure of foreign pig iron offerings is the outstanding feature of the market on the Atlantic seaboard. With stocks in their hands at the ports, notably Philadelphia and Boston, and with additional shipments coming, importers are offering their material at bargain prices. The current lull in buying has only served to make competition keener, since importers are anxious to dispose of their iron before interest and storage charges accumulate. Continental iron is available at $20 to $21, duty paid port of entry, and in many instances silicon differentials are being ignored. Although it is said that prices on foreign iron will rise when present offerings are disposed of, in view of advances at the furnaces abroad, melters are in no haste to buy either imported or domestic metal. Sales by local brokers during the past week probably did not exceed 3000 tons, and there seems to be little prospect for early action on pending tonnage. The large inquiries of the Central Foundry Co., New York, and the Essex Foundry, Newark, have not yet been closed. The Baird Machine Co., Bridgeport, Conn., is still in the market for 500 tons for second quarter, and the General Electric Co. has not yet bought against its inquiry for 600 tons for Everett and Lynn, Mass. Prices on domestic iron show little change, although they have undergone no real test. Melters are following a waiting policy, seeing no danger of price advances and some possibility of a decline. In addition to the pressure of foreign competition, they recognize lower coke prices and heavier domestic output as factors commanding consideration. The Troy, N. Y., furnace is expected to blow in some time this month, and a Buffalo merchant stack which was recently banked has resumed production.

We quote per gross ton delivered in the New York district as follows, having added to furnace prices $2.52 freight from eastern Pennsylvania, $4.91 from Buffalo and $5.54 from Virginia:

East. Pa. No. 2 fdy., sil. 1.75 to 2.25	$24.52
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	25.02
East. Pa. No. 1X fdy., sil. 2.75 to 3.25	25.52
Buffalo fdy., sil. 1.75 to 2.25	25.91
No. 2 Virginia fdy., sil. 1.75 to 2.25	29.54

Ferroalloys.—In ferromanganese, sales and inquiries continue to be confined to carload and small lots, of which there have been a moderate number. The same is true of spiegeleisen. There is no large business before the market and the last two moderately large inquiries for ferromanganese, one of 600 tons for a Western consumer and another of 300 tons for a Southern consumer are understood not to have been placed. Quotations for both alloys remain unchanged.

Finished Steel.—Manufacturing consumers of steel took out their February contract quotas practically in full, but jobbers did not move their stocks quite as rapidly last month as they expected to and many of them specified only a part of their anticipated February requirements. In specific tonnage projects the month did not bring out anywhere near the volume of the last two or three months of 1925, but compared very favorably with January. The steel trade is optimistic that this month will bring out a large volume of spring demands. In structural steel the inquiries have shown only a slight gain with the coming of March. Many projects that are known to be under consideration are being held back until complete plans are available, this being due to the new rule of the Structural Steel Board of Trade that its members shall submit bids only when complete plans are submitted. Most of the mills are now willing to enter second quarter contracts, but buyers are seemingly in no hurry, presumably awaiting possible developments as to prices, but the mills are standing firm for present quotations and it may take two or three weeks to bring buyers and sellers together so far as contracts are concerned.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.34c. to 2.44c. per lb.; plates, 2.14c.; structural shapes, 2.24c. to 2.34c.; bar iron, 2.24c.

Warehouse Business.—February was a better month for most jobbers than January and as the volume of business has been inreasing in the past week to ten days, March is expected to be even better. Prices on structural material continue unsteady but shading of the present schedule is generally small. An effort has been made to advance prices on galvanized sheets and the leading independent warehouse in this district has increased the base price 15c. per 100 lb. to 5.65c. per lb. This brings the warehouse quotation more nearly in line with the present mill schedule, but thus far it has not been generally followed by other sellers, so that the market is represented by a range of 5.50c. to 5.65c. per lb. Black sheets are unchanged at 4.50c. per lb., base. In the non-ferrous field, lead has weakened slightly. Prices on page 676. We quote boiler tubes per 100 ft., as follows:

Lap welded steel tubes, 2-in., $17.33; seamless steel, 2-in., $20.24; charcoal iron, 2-in., $25; 4-in., $67.

Cast Iron Pipe.—Municipal inquiries and purchases continue a feature of the market. Prices are firm but there is as yet no evidence of advances from the present schedule. On 1200 tons of pipe for Albany, N. Y., B. Nicoll & Co., New York, representing the Pont-a-Mousson works, were low bidders. Recent awards include 1800 tons for Buffalo, N. Y., to the United States Cast Iron Pipe & Foundry Co.; about 150 tons for Newark, N. J., divided between the Warren Foundry & Pipe Co. and the Donaldson Iron Co.; Mount Vernon, N. Y., 300 tons to R. D. Wood & Co.; Rochester, N. Y., 2500 tons to the Pont-a-Mousson works. Bids open March 3, at Columbus, Ohio, on about 3000 tons of water pipe. The Queensboro Gas & Electric Co., Far Rockaway, N. Y., recently closed on about 750 tons of 6-in. gas pipe with the Pont-a-Mousson works. The soil pipe market continues moderately active and discounts are unchanged.

We quote pressure pipe per net ton, f.o.b. New York, in carload lots, as follows: 6-in. and larger, $50.60 to $52.60; 4-in. and 5-in., $55.60 to $57.60; 3-in., $65.60 to $67.60; with $5 additional for Class A and gas pipe. Discounts both of Northern and of Southern makers of soil pipe, f.o.b. New York, are as follows: 6-in., 40 to 40¾ per cent off list; heavy, 50 to 50¾ per cent off list.

Coke.—Demand for foundry grade has been quite active in the past week, consumers having evidently delayed purchasing as long as possible to avoid paying the high prices of the coal strike period. Foundry is quoted today at from $5 to $5.50 per net ton, Connellsville, and current buying is lending firmness to the

market. Furnace is quiet at $3.50 per ton. By-product is unchanged at $11.52 per ton, delivered Newark or Jersey City, N. J.

Old Material.—All grades continue quiet and buying prices of brokers are substantially unchanged. Improvement in weather conditions during the past week has facilitated the movement of scrap from yards, but no new business is in evidence. No. 1 heavy melting steel is still being purchased at $15.50 to $16 per ton, delivered to eastern Pennsylvania consumers. Buying prices on machine shop turnings and borings and turnings are off slightly. Stove plate is still moving to local foundries and small shipments are being made to steel mill consumers in eastern Pennsylvania.

Buying prices per gross ton, New York, follow:

Heavy melting steel (yard)	$11.00 to $11.50
Heavy melting steel (railroad or equivalent)	12.25 to 12.75
Rails for rolling	13.00 to 13.50
Relaying rails, nominal	23.00 to 24.00
Steel car axles	19.50 to 20.00
Iron car axles	23.50 to 24.00
No. 1 railroad wrought	13.50 to 14.00
Forge fire	10.50 to 11.00
No. 1 yard wrought, long	12.50 to 13.00
Cast borings (steel mill)	10.00 to 10.25
Cast borings (chemical)	14.00 to 14.50
Machine shop turnings	10.00 to 10.25
Mixed borings and turnings	10.00 to 10.25
Iron and steel pipe (1 in. diam., not under 2 ft. long)	11.75 to 12.25
Stove plate (steel mill)	10.00 to 10.50
Stove plate (foundry)	11.25 to 11.75
Locomotive grate bars	11.25 to 11.75
Malleable cast (railroad)	16.00 to 16.50
Cast iron car wheels	13.50 to 14.00
No. 1 heavy breakable cast	12.75 to 14.50

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast	$17.50 to $18.00
No. 1 heavy cast (columns, building material, etc.), cupola size	16.00 to 16.50
No. 2 cast (radiators, cast boilers, etc.)	15.00 to 15.50

Cleveland

Effort to Cancel Pig Iron Rate Cuts—Automobile Output Expands

CLEVELAND, March 2.—The volume of business in finished steel continues fair, showing little change as compared with the past few weeks. Many look for more activity this month. The firmer tone of the market reported last week is still in evidence, but so far there has been no real test of the attempt of several producers to get a $2 a ton advance for small lots of steel bars, plates and structural material. Steel bars are firm at 2c. and structural material at 1.90c., base Pittsburgh. Mills, in endeavoring to advance plates, are meeting strong price resistance from buyers, and while some small orders have been taken at 1.90c., some of the mills are still going to 1.85c. for car lots. A few consumers have placed contracts for steel bars, plates and structural material for the second quarter, but buyers as a rule are not yet showing much interest in contracts for that delivery, although they have specified freely for March shipments on first quarter contracts. Reports from Detroit indicate that nearly all automobile builders have increased their production this month and that all the leading makers of cars, with possibly one exception, will operate at close to full capacity through March. During the week 3500 tons of bars and structural material was placed for the Union Terminals project in Cleveland. While the largest lot of steel now up in connection with this project, 20,000 tons of structural material for the tower building, has not been formally placed, it is understood that this will go to the American Bridge Co. Some low prices are coming out on fabricated material. A large tonnage recently placed for a building in Detroit went at $66 per ton.

Pig Iron.—Lower pig iron prices are looked for by many consumers in the northern Ohio territory, and they are not inclined to buy for the second quarter until they need the iron. Others feel that they are safe in waiting because they see no chance of an advance, even if prices do not decline. With this general attitude, some effort to break prices is being made, but not by buyers of large enough lots to really test the market. Consequently no deviation is reported from $20.50, Valley and Cleveland, on foundry and malleable iron. While the market in this territory is virtually at a standstill, there is some activity in Michigan and western Ohio where Valley competition is not a factor. There has been a further decline of 50c. to $22, furnace, in western Ohio, where the market a few weeks ago was $23. Here the Ironton district has some bearing on the situation, but in Michigan where Lake and Chicago furnaces are the principal factors, the price is unchanged to $22.50. Sales by Cleveland interests during the week aggregated about 9000 tons, practically none of which was for delivery in this immediate territory. Shipments are good and showed a slight gain in February over January. The automobile industry in Michigan continues to take a large amount of iron. Among inquiries is one from a Canton, Ohio, consumer for 500 to 1000 tons of basic iron for March shipment. The McKinney Steel Co. has blown in one of its Josephine furnaces, Josephine, Pa., and on Monday started up a Cleveland furnace that had been banked. It is now operating two out of four of its Cleveland furnaces. Pig iron producers are watching with deep interest for the next move in what they characterize as the pig iron rate war between the railroads. The agreement of the freight executives of the Central Freight Association at Chicago last Friday to cancel on May 1 all reduced rates that have been put in effect since Jan. 1 and to restore the rates that existed prior to that date may be blocked, since there is a possibility that some producer will ask and secure a suspension of the restoration of the old tariff. In the meantime, the consumers are benefited by the lower rates, but the revenue of the railroads has been reduced and the relative position of the producers in the Lake and Ironton districts in respect to rates to many consuming points has not been changed, because reduction in rates by railroads serving Lake furnaces have been offset by reductions on rates from southern Ohio. The Wabash Railway has joined in the rate cutting by reducing rates from Detroit to South Bend and Ft. Wayne, Ind., effective March 1, making the Detroit rates the same as the Toledo rates to those points.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a $3.02 freight rate from Jackson and $6.01 from Birmingham:

Basic, Valley furnace		$20.00
N'th'n No. 2 fdy., sil. 1.75 to 2.25	$22.26 to	22.50
Southern fdy., sil. 1.75 to 2.25		28.01
Malleable	22.26 to	22.50
Ohio silvery, 8 per cent		33.52
Standard low phos., Valley furnace	27.50 to	28.00

Iron Ore.—Consumers are taking very little interest in the ore market, and it is not expected that prices for the season will be named before about April 1. The inquiry from the Ford Motor Co. is the only specific inquiry that has come into market.

Sheets.—While most of the mills are naming 3.35c., Pittsburgh, for black, 2.50c. for blue annealed, and 4.60c. for galvanized sheets for the second quarter, consumers are showing no interest in closing contracts and these prices have not yet been tested. Many consumers still have large stocks. Black sheets are still weak for current shipment, with 3.25c. rather common, and lower quotations are reported. Galvanized sheets lack strength, but blue annealed sheets are firm and are in much better demand than the other grades. Automobile body sheets are firm at 4.40c.

Semi-Finished Steel.—A few inquiries have come out for sheet bars for the second quarter, but consumers seem in no hurry to buy. Producers have not yet quoted prices, but sentiment tends toward a reaffirming of first quarter prices.

Strip Steel.—Specifications from the automobile industry are still rather light, and while mills are operating well, some have only enough orders on their books to keep them running a week or two. However, some of the mills making hoops and bars are filled up for six to eight weeks.

Warehouse Business.—The demand for material out of stock continues heavy. Prices are unchanged.

Jobbers quote steel bars, 3.10c. per lb.; plates and structural shapes, 3.20c.; No. 28 black sheets, 4.10c.; No. 28 galvanized sheets, 5.25c.; No. 10 blue annealed sheets, 3.25c.; cold-rolled rounds and hexagons, 3.90c.; flats and squares, 4.40c.; hoops and bands, 3.85c.; No. 9 annealed wire, $3 per 100 lb.; No. 9 galvanized wire, $3.45 per 100 lb.; common wire nails, $3 base per keg.

Reinforcing Bars.—The Jones & Laughlin Steel Corporation has taken 2000 tons of reinforcing bars for bridge work in connection with the Union Terminals project in Cleveland. Inquiry for small lots has improved. Rail steel bars are unchanged at 1.80c., mill.

Bolts, Nuts and Rivets.—Bolt and nut specifications are coming out in fair volume, but there is little new business. The industry is operating at about 75 per cent of capacity. The demand for rivets is light. The leading local producer continues to hold to $2.60 per 100 lb. for large rivets.

Old Material.—A large volume of scrap is coming on the market, and this is expected to cause a further weakening in prices. The New York Central and Pennsylvania Railroads have large lists out to be closed this week. The former is offering 5700 tons of old rails and the latter 5470 tons. Another large item on the Pennsylvania list is 4700 tons of heavy melting steel. Large lists have come out from the General Motors Corporation and Dodge Bros., Inc., covering March production. Most grades are weaker. A Valley mill purchased 2000 tons of heavy melting steel from a Cleveland dealer at $17, but is now offering only $16.50. This grade is bringing $14.75 in Cleveland for outside shipment, but dealers would ask about $15.75, delivered to local consumers. Dealers have paid $15.50 for compressed sheet steel for Valley delivery. Unbundled sheet clippings are reported to have sold at $7, Detroit, and $10.50, Youngstown. Borings and turnings are slightly lower. Railroad malleable is scarce and firm.

We quote dealers' prices f.o.b. Cleveland per gross ton:

Heavy melting steel	$14.75 to $15.25
Rails for rolling	16.75 to 17.00
Rails under 3 ft.	18.50 to 19.00
Low phos. heavy melting	17.75 to 18.25
Cast iron borings	12.00 to 12.50
Machine shop turnings	11.00 to 11.50
Mixed borings and short turnings	12.00 to 12.50
Compressed sheet steel	13.25 to 13.50
Railroad wrought	13.75 to 14.25
Railroad malleable	20.00 to 20.50
Light bundled sheet stampings	12.25 to 12.50
Steel axle turnings	14.00 to 14.50
No. 1 cast	17.50 to 18.00
No. 1 busheling	12.00 to 12.50
Drop forge flashings	13.25 to 13.50
Railroad grate bars	13.25 to 13.50
Stove plate	13.25 to 13.50
Pipes and flues	11.50 to 12.00

Further Declines in Scrap in Detroit District

DETROIT, March 2.—Further declines have been registered on practically all grades of scrap in the Detroit district during the past week, due to a continuance of orders being placed for future delivery. Several purchases have been made involving considerable tonnage, but these have been consummated between the mills and the producers direct.

The following prices are quoted on a gross ton basis f.o.b. producers' yards, excepting stove plate, No. 1 machinery cast and automobile cast, which are quoted on a net ton basis:

Heavy melting and shoveling steel	$13.50 to $14.00
Borings and short turnings	10.00 to 10.50
Long turnings	9.00 to 9.50
No. 1 machinery cast	17.00 to 18.00
Automobile cast	23.00 to 24.00
Hydraulic compressed	11.75 to 12.25
Stove plate	13.50 to 14.50
No. 1 busheling	11.75 to 12.25
Sheet clippings	7.00 to 7.50
Flashings	10.50 to 11.00

The Legislative Assembly of India has passed a bill increasing the duty in tin plate from 65 to 85 rupees per ton and will become effective upon the approval of the Governor General, according to a cablegram received by the Department of Commerce from Trade Commission Charles B. Spofford, Calcutta.

Philadelphia

Plates Stronger and Advance to 1.90c. Is Possibility—Pig Iron Weaker

PHILADELPHIA, March 2.—February steel business was fairly satisfactory for the mills selling in this district, if the comparison is made with February of last year rather than with the volume of buying of the last two or three months of 1925. Attention is now being given to second quarter buying, which is expected to develop within the next two weeks, and there is talk among some of the steel companies of advancing prices for that period. Whether the effort will seriously be made remains to be seen, but there is the possibility that higher prices may be announced if for no other reason than to bolster up present quotations as a basis for second quarter contracts. A leading Pittsburgh interest is reported to be ready to announce an advance of $2 a ton on plates, shapes and bars, and Eastern plate mills are considering an announcement that the second quarter plate price will be 1.90c., Pittsburgh. Contracts for hot and cold-rolled strip steel for second quarter have been entered at present prices, but in other lines there has been very little, in fact, practically no contracting.

Eastern plate manufacturers say that 1.80c., Pittsburgh, the current quotation, is not a profitable price, and the effort to reduce operating costs, which was begun some months ago by the Lukens Steel Co., Coatesville, Pa., has just been followed by the Central Iron & Steel Co., Harrisburg, Pa., which has put into effect a wage cut approximating 10 per cent.

On foundry pig iron for second quarter, quotations as low as $22, base furnace, have been made by makers in this district. The scrap market continues dull, but prices show no further change, and the opinion prevails among brokers and dealers that the bottom of this decline has been reached.

Pig Iron.—No sales of importance have been made within the week, but some of the eastern Pennsylvania furnaces have quoted $22, $22.25 and $22.50, base, on foundry iron for second quarter. Inquiry in the immediate Philadelphia district is light, but there is a fair amount pending in the New York and New England districts, and the closing of these contracts will have a decided bearing on the price situation for second quarter. No interest is being taken in basic iron, but some of the producers indicate that their quotations, if inquiry should come out soon, would be $21.50 to $22, furnace. The fact that practically all users of basic in this district now insist on a minimum of 1.25 per cent manganese has had a tendency to narrow the range between basic and foundry iron, as the former is now about as costly to make as the latter. Malleable iron has been sold at $21.75, furnace, or about $23, delivered. Low phosphorus in small lots ranges from $22.50 to $24, depending upon the location of the furnace with relation to the buyer's plant.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76c. to $1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	$23.26 to $24.13
East. Pa. No. 2X, 2.25 to 2.75 sil.	23.76 to 24.63
East. Pa. No. 1X	24.26 to 25.13
Virginia No. 2 plain, 1.75 to 2.25 sil.	27.67 to 28.67
Virginia No. 2X, 2.25 to 2.75 sil.	28.17 to 29.17
Basic, delivered eastern Pa.	22.50 to 23.00
Gray forge	22.50 to 23.00
Malleable	23.00 to 23.50
Standard low phos. (f.o.b. furnace)	22.50 to 23.50
Copper bearing low phos. (f.o.b. furnace)	24.00

Structural Shapes.—There are no large projects in the market, but the mills are getting a fairly good number of small orders, mostly for quick rolling. Another building for the Sesqui-Centennial Exposition is up for bids but involves only 500 tons. The price situation is unchanged, quotations in this district ranging from 1.80c. to 1.90c., Pittsburgh. Outside of Philadelphia quotations are more nearly on a 1.90c. basis.

Bars.—The coming of better weather has resulted in the release of some tonnages of concrete reinforcing bars, but otherwise demand continues only fair. February specifications were not quite up to expectations. Bar iron remains at 2.22c., Philadelphia.

Sheets.—Mills report a stiffening of sheet prices, which probably is to be expected in view of the fact that second quarter contracting is only two or three weeks away. On lots for prompt shipment concessions seem to be less frequent.

Warehouse Business.—Local jobbers report that February tonnage moved out of stock was larger than in the same month last year. Prices are unchanged, and for local delivery are quoted as follows:

Soft steel bars and small shapes, 2.90c. to 3.20c. per lb.; iron bars (except bands), 2.90c. to 3.20c.; round edge iron, 3.50c.; round edge steel, iron finished, 1½ x ½ in., 3.50c.; round edge steel, planished, 4.30c.; tank steel plates, ¼-in. and heavier, 2.80c. to 3c.; tank steel plates, ⅜-in., 3c.; blue annealed steel sheets, No. 10 gage, 3.50c.; black sheets, No. 28 gage, 4.65c.; galvanized sheets, No. 28 gage, 5.85c.; square, twisted and deformed steel bars, 3c.; structural shapes, 2.75c. to 2.90c.; diamond pattern plates, ¼-in., 5.30c.; ⅜-in., 5.50c.; spring steel, 5c.; rounds and hexagons, cold-rolled steel, 4c.; squares and flats, cold-rolled steel, 4.50c.; steel hoops, 4c. to 4.25c., base; steel bands, No. 12 gage to ⅞-in., inclusive, 3.75c. to 3.90c.; rails, 3.20c.; tool steel, 8.50c.; Norway iron, 6.50c.

Ferromanganese.—With buying at a very low point, the price of ferromanganese remains at $115 for either foreign or domestic.

Billets.—Quotations on billets remain at $35 for rerolling quality and at $40 for forging quality.

Plates.—The number of miscellaneous orders for plates has increased and the price is uniformly 1.80c., Pittsburgh. No second quarter contracting has been done, and the mills are now considering what their price shall be for that period. One or two intimate that an advance to 1.90c. is in prospect. Two scout cruisers for the United States Navy, one to be built at the Brooklyn Navy Yard and the other by a private yard on competitive bids, will each take 10,000 tons of steel, including armor plate. The Navy program calls for a total of eight cruisers, but appropriations for only two have been granted.

Imports.—Pig iron imports at Philadelphia in the week ended Saturday totaled 4530 tons, of which 3030 tons came from Germany, 930 from the Netherlands and 600 from England. Other imports were: 100 tons of ferromanganese and 100 tons of spiegeleisen from England; 98 tons of structural steel from Germany and three tons from Luxemburg.

Old Material.—Except for the fact that brokers and dealers are now confident that the decline in scrap prices has reached bottom, the scrap market presents no change. Two mills are willing to pay $16 for heavy melting steel, while for another mill the highest that is offered is $15.50. No price changes have occurred within the week.

We quote for delivery, consuming points in this district, as follows:

No. 1 heavy melting steel	$15.50 to $16.00
Scrap rails	15.50 to 16.00
Steel rails for rolling	17.00 to 17.50
No. 1 low phos., heavy, 0.04 per cent and under	20.00 to 21.00
Couplers and knuckles	19.00 to 20.00
Rolled steel wheels	19.00 to 20.00
Cast iron car wheels	17.50 to 18.00
No. 1 railroad wrought	17.50 to 18.00
No. 1 yard wrought	16.50 to 17.00
No. 1 forge fire	14.50 to 15.00
Bundled sheets (for steel works)	13.50
Mixed borings and turnings (for blast furnace)	13.00 to 13.50
Machine shop turnings (for steel works)	13.50
Machine shop turnings (for rolling mill)	14.00
Heavy axle turnings (or equivalent)	15.00
Cast borings (for steel works and rolling mill)	14.00
Cast borings (for chemical plant)	15.50 to 16.00
No. 1 cast	17.50 to 18.00
Heavy breakable cast (for steel works)	16.00 to 16.50
Railroad grate bars	14.50
Stove plate (for steel works)	14.50
Wrought iron and soft steel pipes and tubes (new specifications)	15.50 to 16.00
Shafting	21.00 to 22.00
Steel axles	21.00 to 22.00

REINFORCING STEEL

The Week's Awards Total About 6500 Tons—Pending Business Small at 800 Tons

Concrete reinforcing bar awards reported for the week totaled about 6500 tons, the largest, 2000 tons, for the Union Terminal project at Cleveland. The volume of pending business is light and calls for only 800 tons. The average week's awards for the month of February was 3482, compared with a January weekly average of 3072 tons. Awards follow:

PHILADELPHIA, about 400 tons, Fidelity Mutual Life Insurance Co., to Jones & Laughlin Steel Corporation.

CINCINNATI, 200 tons, building for Sisters of Charity, to Pollak Steel Co.

DAYTON, OHIO, 800 tons, Mad River power plant, Ohio Edison Co., Bethlehem Steel Co.

CLEVELAND, 2000 tons, Union Terminal, to Jones & Laughlin Steel Corporation.

TORONTO, OHIO, 1000 tons, power plant, Ohio Edison Co., to Truscon Steel Co.

GALLOWAY, TENN., 200 tons, bridge to Concrete Engineering Co.

INDIANAPOLIS, IND., 125 tons, Nurses' Home, to Concrete Engineering Co.

CHICAGO, 205 tons, Central Wholesale Groceries Co., building, to Barton Spiderweb System, Inc.

CHICAGO, 200 tons rail steel, Paradise Theater, to Calumet Steel Co.

ST. LOUIS, 80 tons, Forest Park Hotel addition, to Laclede Steel Co.

OAKLAND, CAL., 650 tons, East Bay Municipal Utility District; building at California and Montgomery Streets, San Francisco, 200 tons; Edison School, San Francisco, 200 tons, all to Truscon Steel Co.

SAN FRANCISCO, 100 tons, apartment, Pacific and Laguna Streets, to unnamed local jobber.

Reinforcing Bars Pending

Inquiries for reinforcing steel bars include the following:

DAYTON, OHIO, 100 tons, Wilbur Wright High School; bids close March 7.

INDIANAPOLIS, IND., 500 tons, War Memorial.

CHICAGO, 100 tons, Halsted Institutional Church; Thielbar & Hugard, architect.

CHICAGO, 100 tons, Illinois Central Station.

CHICAGO, 240 tons, Crane Co.; general contract awarded to William Adams.

CHICAGO, 100 tons, Christopher School; general contractor, S. N. Nielsen.

Aluminum Company Investigation Quashed

WASHINGTON, March 2.—The Senate by a narrow margin having decided not to scrap the Constitution nor to set itself up as the executive, judicial and legislative branches all rolled into one, there will be no investigation of the Aluminum Co. of America. It is a remarkable fact, however, that the Senate took itself so seriously as to defeat this project by a partisan vote aided by only a couple of Democratic votes. The fact that Secretary of the Treasury Mellon and his brother, R. B. Mellon, are prominent stockholders in the company, coupled with the fact that the country is on the eve of a congressional election, has inevitably led to the conviction that the move of the Senate was of a purely political character.

Senator Walsh, of Montana, urged that the Senate take upon itself the work of investigating the Aluminum company, thus overriding the prerogative of the Department of Justice. It is evident that, had the Senate voted for the investigation, it would have come into immediate contact with the Executive Department, headed by President Coolidge. It likewise is apparent that the Senate would have been defeated in its effort and compelled to return to its own jurisdiction.

Final report of the Department of Justice said that the stockholdings of Secretary Mellon and his brother, R. B. Mellon, "are far from sufficient to constitute control of the company." It has been stated many times that A. W. Mellon supplied the original capital for the company. Such is not a fact. The records show that his first connection with the company was nearly two years after its formation, when he acquired 60 shares."

FABRICATED STEEL

Awards Close to 40,000 Tons Bring Week to Second Largest of Year—Total of Inquiries Smaller

The recent improvement continues and with total reported awards of close to 40,000 tons, the past week is the second largest since Jan. 1. Several large tonnages contributed, among which were 6500 tons for the New York subway, 6000 tons for a bank in New Orleans and 5000 tons for a Chicago power plant. Of about 18,500 tons of new inquiries, one of the largest, 2700 tons, was for bridges for the Louisville & Nashville Railroad. Awards follow:

NEW YORK, 6500 tons, section 4 A, route 78 of the new subways, to Bethlehem Steel Corporation.

NEW YORK, 1000 tons, factory and warehouse for the American Sugar Refining Co., to Jones & Laughlin Steel Corporation.

NEW YORK, 300 tons for sub-station for the New York Edison Co., to Hedden Iron Construction Co.

NEW YORK, 700 tons, apartment building on University Place between Ninth and Tenth Streets, to A. E. Norton, Inc.

ELIZABETH, N. J., 100 tons, warehouse, to H. R. Goeller.

WILLIAMSPORT, PA., 200 tons, high school building, to an unnamed fabricator.

LODI, N. J., 400 tons, power plant for the Du Pont Co., to Belmont Iron Works.

SOUTHERN RAILWAY, 150 tons for bridges to American Bridge Co. and 750 tons to other fabricators.

BRADFORD, PA., 100 tons, kiln car frames, Hanley Ceramics Co., to Jones & Laughlin Steel Corporation.

DAYTON, 100 tons for water works pumping station to Oregonia Bridge Co., Lebanon, Ohio.

DAYTON, OHIO, 1000 tons, Mad River power plant, Ohio Edison Co., to Bellefontaine Bridge & Steel Co., Bellefontaine, Ohio.

DURAND, MICH., 100 tons, Michigan State highway bridge, to American Bridge Co.

SCOTT COUNTY, IND., 120 tons for a highway bridge, to Vincennes Bridge Co., Vincennes, Ind.

DETROIT, 620 tons, administration building for Parke, Davis & Co., to Whitehead & Kales Co.

DETROIT, 1200 tons, exchange buildings for Michigan Bell Telephone Co., to Whitehead & Kales Co.

CLEVELAND, 350 tons for the Columbus Road bridge, Union Terminals project, to McClintic-Marshall Co.

RICHMOND, VA., 1500 tons, Acca Temple, to Phoenix Bridge Co.

PHILADELPHIA, 500 tons, building for Sesqui-Centennial Exposition.

PHILADELPHIA, 300 tons, building for Mack Printing Co.

HUNTERDON COUNTY, N. J., 250 tons, highway bridge, to Bethlehem Steel Corporation.

NEW ORLEANS, 6000 tons, Canal and Commercial Bank Building, to McClintic-Marshall Co.

CHICAGO, 5000 tons, Commonwealth Edison Co. Crawford Avenue power station, to American Bridge Co.

CHICAGO, 1400 tons, extension to train shed for Crane Co., to American Bridge Co.

ST. LOUIS-SAN FRANCISCO railroad, 625 tons for bridges, to American Bridge Co., and 610 tons to Virginia Bridge & Iron Co.

MISSOURI PACIFIC railroad, 115 tons for bridges, to American Bridge Co.

PALMER, MICH., and McKinley, Minn., 200 tons each for two crushing plants for Pickands, Mather & Co., to Worden-Allen Co.

DES MOINES, IOWA, 340 tons, Scottish Rite Temple, to Pittsburgh-Des Moines Steel Co.

MASON CITY, IOWA, 110 tons, Y. M. C. A. Building, to Rock Island Bridge & Iron Works.

SALT LAKE CITY, UTAH, 200 tons for a dancing pavillion, to Minneapolis Steel & Machinery Co.

SALT LAKE CITY, UTAH, 3300 tons of lock bar pipe, United States Stores Co., for shipment to Alaska, to Western Pipe & Steel Co., San Francisco.

PHOENIX, ARIZ., 110 tons of sheet piling, for Gillespie Dam bridge, to unknown mill.

SAN FRANCISCO, Pacific Rolling Mills Co., Inc., for new fabricating shop which will be fabricated in present plant.

SAN FRANCISCO, 3500 tons, Feather River Power Co., to Ferrum Co. of Germany and the Western Pipe & Steel Co.

OAKLAND, CAL., 100 tons, Graphic Arts Building, to Judson Iron Works, San Francisco.

LOS ANGELES, 150 tons for a theater, to Union Iron Works of Los Angeles.

LOS ANGELES, 800 tons for a theater, to Llewellyn Iron Works, Los Angeles.

SAN DIEGO, CAL., 700 tons for a theater, to Moore Dry Dock Co.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

NEW YORK CENTRAL, 200 tons for a bridge.

NEW HAVEN, CONN., 325 tons, Masonic Temple.

PENNSYLVANIA RAILROAD, 250 tons for bridges.

MIDDLETOWN, CONN., 300 tons, Wesleyan University Library.

NEWARK, N. J., 1500 tons, Essex County Hall of Records.

WATERTOWN, MASS., 275 tons, American Soda Fountain Co.

LEWISTON, ME., 150 tons, locker building and gymnasium.

WORCESTER, MASS., 200 tons, service station, Mack Motor Co.

LOUISVILLE & NASHVILLE RAILROAD, 2700 tons for bridges; bids opened March 1.

COLUMBUS, OHIO, 200 tons, agricultural building at Ohio State fair grounds; bids opened March 2.

DAYTON, OHIO, 100 tons, Wilbur Wright high school; bids close March 7.

CHICAGO, 450 tons, Midwest Athletic Club.

TACOMA, WASH., 300 tons, pipe line; bids, March 27.

LOS ANGELES, 212 tons. Specification 789-C.

LOS ANGELES, 2020 tons, tanks for Union Oil Co.; bids in.

LOS ANGELES, penstock, 1500 tons; bids in.

LOS ANGELES, 1200 tons, Beaux Arts Building.

LOS ANGELES, 150 tons, theater, Maplewood and Western Avenues.

LOS ANGELES, 150 tons, Wylie Apartments.

RIO HONDO RIVER, near Los Angeles, 200 tons, bridge; bids close March 22.

OAKLAND-ALAMEDA estuary bridge, 310 tons; bids in.

OAKLAND, CAL., 1100 tons, Scottish Rite Temple.

OAKLAND, 500 tons, Franklin Building.

SACRAMENTO, CAL., 140 tons, grandstand; bids March 4.

SAN FRANCISCO, 450 tons, apartment, Laguna Street.

SAN FRANCISCO, 525 tons, Hale Brothers department store addition.

SPOKANE, WASH., 500 tons, bridge.

DOUGLAS, ARIZ., smelter, 2500 tons, Phelps-Dodge Co.

RAILROAD EQUIPMENT

Illinois Central Buys Cars and Inquires for 200 More—Southern Pacific Buys Locomotives

Of the 2350 cars reported purchased during the week, 2300 were gondola type for the Illinois Central. There is considerable activity in steel underframes. The Chicago & North Western has awarded 500, the Great Northern 250 and the Northern Pacific is inquiring for 250. Reported inquiries for cars this week are small, the largest for 200 automobile furniture cars being from the Illinois Central. A sizable locomotive purchase was that of the Southern Pacific, which placed 23 of the 4-10-2 type.

Locomotives in need of repair, Feb. 1, according to the Car Service Division, American Railway Association, totaled 10,087, 16 per cent of the number on line, which was a decrease of 649 from the number on Jan. 15, when 17 per cent were in need of repair. It was a decrease of 1227 locomotives compared with the number in need of repair on the same date last year, when there was a total of 11,314 or 17.6 per cent of the number on line.

The Illinois Central has placed orders for 2300 steel gondola cars with the following companies: Pullman Car & Mfg. Corporation, 500; Standard Steel Car Co., 600; Illinois Car & Mfg. Co., 500; Ryan Car Co., 200; Mount Vernon Car Mfg. Co., 500. This road has also placed 50 caboose cars with the American Car & Foundry Co., and is in the market for 200 automobile furniture cars.

The Missouri Pacific is inquiring for 600 box car bodies and is also taking bids on repairs to the same number of trucks.

The Pere Marquette is in the market for 10 air dump cars of 30-cu. yd. capacity, in addition to the 350 automobile cars mentioned a week ago.

The General Equipment Co. has contracted with the American Car & Foundry Co. for the repair of 50 gondola cars.

The Southern Pacific has placed an order with the American Locomotive Co. for 23 locomotives of the 4-10-2 type.

The Chicago & North Western is rebuilding 500 automobile cars in its shops and has awarded 250 underframes to the Ryan Car Co. and a like number to the Western Steel Car & Foundry Co.

The Northern Pacific is inquiring for 220 underframes.

The Great Northern has placed 250 underframes with the Sicms-Stemble Co.

NON-FERROUS METALS

The Week's Prices

Cents per Pound for Early Delivery

	Copper, New York		Straits Tin (Spot)	Lead		Zinc	
Feb.	Lake	Electrolytic*	New York	New York	St. Louis	New York	St. Louis
24	14.50	14.00	64.12½	9.10	8.80	8.10	7.75
25	14.37½	14.00	64.12½	9.00	8.70	8.02½	7.67½
26	14.37½	14.00	64.25	9.00	8.70	7.90	7.55
27	14.37½	14.00	....	9.00	8.70	7.80	7.45
March							
1	14.37½	14.00	64.75	8.90	8.60	7.77½	7.42½
2	14.37½	13.87½	64.00	8.90	8.60	7.70	7.35

*Refinery quotation; delivered price ¼c. higher.

New York

NEW YORK, March 2.

Pronounced inactivity features most of the markets. With London prices decidedly lower in all markets today, prices here are declining. Buying of copper is light and quotations are easier. Tin is the strongest market, but activity has subsided. Lead prices have suddenly turned downward, with supplies larger than demand. Recessions in zinc have been pronounced and buying is very poor.

Copper.—The market shows practically no improvement. Prices have been declining in London for both electrolytic and standard copper and this has had an effect on the market here. Domestic consumers watch every favorable and unfavorable indication bearing on prices and are doing almost no buying. There was a sale last week of 1000 net tons, but as a rule consumers are holding off for the most favorable prices in a market such as the present one. It is admitted that some consumers have still March metal to purchase. While there has been no fair test in the last day or two and while most producers are quoting 14.25c., delivered, as a minimum, electrolytic copper can be purchased today at 14.12½c., delivered. With consumers waiting for lower prices until they have to buy and with most producers well booked, the market is a waiting one. Lake copper is quoted at 14.37½c.

Copper Averages.—The average price of Lake copper for the month of February, based on daily quotations in THE IRON AGE, was 14.41c., delivered. The average price of electrolytic copper was 14c., refinery, or 14.25c., delivered.

Tin.—The market has been quite dull the past week. Total sales of Straits tin have been no more than 600 tons, about half of this changing hands on Feb. 25. In most of the transactions profit taking was quite a factor. One opinion of the general situation is to the effect that while February, March and April prompt metal is hard to buy, futures are not so strong because of expected large supplies around May 15. Spot Straits tin today was quoted at 64c., New York, with buying light. London prices today were about 5s. per ton higher than a week ago, with spot standard quoted at £294 12s. 6d., future standard at £284 10s. and spot Straits at £294 15s. The Singapore price today was £287 10s. Statistics for February show deliveries into consumption to have been 6250 tons, with 3399 tons in stock and landing on Feb. 28. Arrivals during the month were 7545 tons. The world's visible supply as of March 1 showed a decrease of 500 tons, the total being 16,289 tons. A year ago this visible supply was 23,591 tons.

Lead.—The American Smelting & Refining Co. reduced its contract quotation twice in the last week from 9.15c. to 9c., New York, on Feb. 25 and from 9c. to 8.90c., New York, yesterday, March 1. The outside market met these reductions and the entire situation is easy. The decline in the London market today was sharp, spot lead falling 16s. 3d. and futures 18s. 9d. per ton. The weakness in the market here is due to lower prices in London during the entire week, there having been a decline since Feb. 23 of £1 10s. in spot and £1 12s. 6d. per ton in futures. This weakness is said to be due to a falling off in demand from British consumers and large shipments from Spain and Australia.

Zinc.—Prices have again turned weak, due largely to lower prices in London, until prime Western today was quoted at 7.35c., St. Louis, with demand very light. Some sales are made at this level. The domestic situation remains unchanged and has had no particular bearing on the trend of the market in the last few days. Interest in the statistics for February, which will be made public soon, is keen and the publication may have some bearing on the market.

Nickel.—Wholesale lots of ingot nickel are quoted at 35c. with shot nickel at 36c. and electrolytic nickel at 39c. per lb.

Antimony.—The market is inactive and somewhat easier. Chinese metal for spot and March-April arrival is quoted at 20.50c. to 20.75c., New York, duty paid. January-February shipment from China is quoted at about ½c. per lb. under the prompt price, duty paid, New York.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is obtainable as ingots at 27c. to 28c. per lb., delivered.

Old Metals.—The market is unsettled because of the constant changes of ideas as to the position of new copper. Dealers' selling prices, in cents per lb., are as follows:

Copper, heavy and crucible	13.75
Copper, heavy and wire	13.00
Copper, light and wire	11.75
Heavy machine composition	10.00
Brass, heavy	9.00
Brass, light	7.75
No. 1 red brass or composition turnings	9.00
No. 1 yellow rod brass turnings	9.375
Lead, heavy	8.00
Lead, tea	6.75
Zinc	5.00
Cast aluminum	20.00
Sheet aluminum	20.00

Chicago

MARCH 2.—This market is unusually quiet. Copper, lead, zinc and antimony have declined. The lower price of lead is the result of lack of interest by buyers and a reduction in price made by the leading producer. Dealers report that the old metal market is quiet and that the price tendency is downward. We quote, in carload lots: Lake copper, 14.50c.; tin, 65c.; lead, 8.80c.; zinc, 7.60c.; in less than carload lots, antimony, 23c. On old metals we quote copper wire, crucible shapes and copper clips, 10.75c.; copper bottoms, 9.25c.; red brass, 9c.; yellow brass, 8c.; lead pipe, 7.50c.; zinc, 5c.; pewter, No. 1, 37c.; tin foil, 44c.; block tin, 52c.; aluminum, 19.50c.; all being dealers' buying prices for less than carload lots.

Non-Ferrous Rolled Products

Prices on brass, bronze and copper products have remained unchanged since they were advanced ¼c. per lb. as of Feb. 5. Zinc sheets have not been changed in 10 weeks. Lead full sheets are down ¼c. per lb. For New York warehouse prices see page 676.

List Prices Per Lb., f.o.b. Mill

On Copper and Brass Products, Freight Up to 75c. Per 100 Lb. Allowed on Shipments of 500 Lb. or Over

Sheets	
High brass	19⅛c.
Copper, hot rolled	22⅜c.
Zinc	12c.
Lead (full sheets)	12¾c.
Seamless Tubes	
High brass	23¾c.
Copper	24½c.
Rods	
High brass	16⅞c.
Naval brass	19⅝c.
Wire	
Copper	16½c.
High brass	19⅝c.
Copper in Rolls	21⅝c.
Brazed Brass Tubing	27⅛c.

Aluminum Products in Ton Lots

The carload freight rate is allowed to destinations east of the Mississippi River and also allowed to St. Louis on shipments to destinations west of that river.

Sheets, 0 to 10 gage, 3 to 30 in. wide	37½c.
Tubes, base	48c.
Machine rods	34c.

PERSONAL

Philip A. Koehring, secretary and treasurer Koehring Corporation, Milwaukee, manufacturer of excavating machinery, concrete mixers, paving outfits, etc., has been elected president of the Milwaukee Association of Commerce. Mr. Koehring is spending five weeks in Mexico, studying business possibilities in mining and highway construction.

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Walter Ayer, for eleven years president Fuller & Johnson Mfg. Co., Madison, Wis., manufacturer of gasoline engines and power farm machinery, has resigned and the vacancy has been filled by the election of C. L. McMullen, vice-president and sales manager.

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George Endicott, secretary and recently assistant to the vice-president in charge of operations, Wickwire Spencer Steel Co., Worcester, Mass., has resigned. Following a short vacation in England he will be identified with the Smith & Dove Mfg. Co., Andover, Mass., of which he has been made a director.

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Walton L. Woody, who has been manager of the Cleveland plant of the National Malleable & Steel Castings Co., has been appointed manager of the company's No. 1 plant in Chicago, succeeding B. W. Conlin, who has retired. George J. Leroux has been appointed acting manager of the company's Cleveland plant.

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H. L. Rankin, formerly manager of the Canton, Ohio, plant of the American Bridge Co., has been appointed manager of the company's Toledo plant, to fill a vacancy caused by the death of M. J. Riggs. Mr. Rankin has been succeeded as manager of the Canton plant by J. W. Peterson, who has been engineer at that plant.

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E. Allen Moore, chairman of the executive committee, New Britain Machine Co., New Britain, Conn., retired from the directorate of that company at the annual meeting a week ago.

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L. G. Pearce, formerly chief draftsman Mackintosh-Hemphill Co., Pittsburgh, has been appointed plant engineer, Pittsburgh Crucible Steel Co., Midland, Pa.

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Murray N. Billings, assistant traffic manager Illinois Steel Co., Chicago, is the selection of the nominating committee for president of the Traffic Club of Chicago for the current year.

—

A. R. Johnson has been appointed New York district sales manager of the Trumbull Steel Co., Warren, Ohio, with offices in the Grand Central Terminal Building. Mr. Johnson has been associated with the steel industry for many years, and has directed the Trumbull interests in the Chicago territory during the last ten years.

—

L. J. Simmonds has been appointed Chicago district sales manager of the Trumbull Steel Co., Warren, Ohio, with offices in the Continental & Commercial National Bank Building. He succeeds A. R. Johnson, who has been transferred to New York. Willard Foster will assist Mr. Simmonds in the Chicago district.

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J. L. Hanna, formerly in the sales advertising business, has joined the Continental Steel Products Co., Youngstown, Ohio. The company handles sheets and strip steel. C. E. Heil is manager.

—

Knowles Pittman has been appointed sales manager, Burnside Steel Foundry Co., 1300 East Ninety-second Street, Chicago. He was formerly sales manager of the Nugent Steel Castings Co., Chicago.

—

Maxwell M. Upson, vice-president Raymond Concrete Pile Co., New York, was elected president of the American Concrete Institute, at the twenty-second annual convention, held at Chicago, Feb. 23 to 26. He succeeds A. E. Lindau, president American System of Reinforcing, Chicago. P. H. Bates, of the Bureau of Standards, A. C. Tozzer and R. J. Wig were elected vice-presidents.

—

Arthur S. Andersen, formerly secretary Terre Haute Malleable & Mfg. Co., has been elected president Standard Malleable Castings Co., Terre Haute, Ind., succeeding Emil J. Fischer, resigned. E. D. Halsey has been made secretary.

—

Laurence W. Bevan has been appointed general manager Hazard Mfg. Co., Wilkes-Barre, Pa. He is a graduate of Pennsylvania State College, class of 1912, metallurgy course. He entered the employ of the company 13 years ago as metallurgical engineer, and advanced successively to production engineer and assistant general manager. The company makes wire rope and insulated wire and cables.

—

William S. Hart has been appointed special representative in charge of the sale of Hazard Mfg. Co. products in the oil fields of the United States, with headquarters in Wilkes-Barre, Pa. Has been in the employ of the company since 1888. After serving in the factory he was placed in the Pittsburgh district office as wire rope service engineer, and a few years later was made assistant district manager. During the war period Mr. Hart acted as assistant general superintendent of the factory, and then was appointed district manager of the Chicago branch.

—

Thomas A. Keefe has been appointed district manager of Chicago branch of Hazard Mfg. Co., Wilkes-Barre, Pa. He joined the company in 1913 in the Pittsburgh office as a salesman for wire rope and electrical wires. In 1918 he was appointed assistant district manager of the Pittsburgh branch, which office he still retains.

—

Ray L. Cathcart, for the past 12 years associated with the New Jersey Zinc Co., and its subsidiary the New Jersey Zinc Sales Co., and since 1918 Pittsburgh district manager of sales, has resigned to become vice-president E. E. Zimmerman Co., Pittsburgh, manufacturers' agent in the sale of painting materials. Mr. Cathcart's successor is Harold Hedden, who was in the Pittsburgh office for three years, but for the past three years has been in the New York office of the company.

—

H. C. Osman, sales manager Nugent Steel Castings Co., Chicago, has been elected secretary. He will continue to have charge of the sales. C. A. MacDonald, formerly secretary, has been elected treasurer.

—

John V. W. Reynders sailed for Europe Feb. 27 on the steamship Olympic, on business connected with the American-Caucasian manganese ore concession.

—

E. H. Haslam, president and manager Hadfield-Penfield Steel Co., Bucyrus, Ohio, recently returned from a trip to Europe and a conference with Sir Robert Hadfield on matters pertaining to his company. He was present in Paris some weeks ago on the occasion of the conferring upon Sir Robert Hadfield of La Croix de l'Officier de Legion d'Honneur, which was awarded him in recognition of his services to the science of metallurgy. The insignia of the order were presented to Sir Robert by the French ambassador, who also gave him his own "bouton rouge," because he is a member of the same order, this being the usual indication worn on ordinary morning dress by those who have received this honor.

—

Charles Whiting Baker, formerly editor of the *Engineering News* and for several years past director of the Engineering Business Exchange, New York, announces his connection with Baker, Simonds & Co., Inc., investment bankers, Detroit and New York.

—

Robert Adler has acquired an interest in the St. Paul Roofing, Cornice & Ornament Co., St. Paul, Minn., manufacturer of sheet metal products, and has been elected vice-president. Mr. Adler was with the Truscon Steel Co. for twelve years, having been for the last seven years northwestern manager for that company.

with headquarters at Minneapolis. He will assume also the duties of vice-president of the Metal Shelter Co., a subsidiary of the St. Paul company. His resignation, as of Dec. 15, from the Truscon Steel Co. was noted in THE IRON AGE of Dec. 10.

—

Archibald Johnston and Henry S. Snyder, who recently resigned as vice-presidents of the Bethlehem Steel Corporation, have gone on a two months' trip to Honolulu.

—

George E. Wisener will retire July 1, next, as general superintendent Mingo and Bellaire, Ohio, plants of the Carnegie Steel Co. He has been identified with the Carnegie Steel Co. for 40 years and before his promotion to his present position, 20 years ago, had been superintendent Bessemer department, since dismantled, in the Homestead works of the company.

—

J. L. Hilton, formerly with the Heltzel Steel Form & Iron Co., Warren, Ohio, has been engaged by the Meehan Boiler & Construction Co., Lowellville, Ohio, as general superintendent and manager of sales. His resignation from the Heltzel company was noted in THE IRON AGE of Feb. 18.

—

Sherwood C. Bliss has become associated with Richmond Radiator Co., 1480 Broadway, New York, as assistant to the president, in charge of manufacture. Mr. Bliss has been connected in an engineering capacity in the production of boilers and radiators for the past 17 years. In 1917 he joined the Ordnance Reserve Corps and had charge of the engineering of 4-in. naval guns made at Bayonne, N. J. In 1924 he was appointed director of mechanical engineering and design for a large radiator company. He has been engaged recently in industrial engineering. He is a member of the Engineering Society of Buffalo and the Society of Industrial Engineers.

—

Winston E. Werm, who for six years has been in the New York sales department of the Jones & Laughlin Steel Corporation, has resigned to enter the sales department of Eggleston Brothers, jobbers, New York.

—

L. M. Hartzell, assistant district sales manager at Cincinnati for the Carnegie Steel Co., has resigned. He will enter the real estate business in that city.

OBITUARY

JOHN D. ORMROD, president Donaldson Iron Co., Emaus, Pa., died of pneumonia Feb. 23 at the Allentown, Pa., hospital, to which he had been taken the day before from his home in Emaus. Mr. Ormrod, who was 60 years of age, became president of the company in 1915 on the death of his father, George Ormrod, who, in conjunction with John Donaldson, a cousin, had established the Donaldson Iron Co. in 1886. Mr. Ormrod was born in Emaus and prior to becoming president had held other positions in the company, including that of superintendent of works. A son, George Ormrod, is connected with the company.

—

FRANK DICKERSON, former vice-president and general manager of sales American Sheet & Tin Plate Co., died at St. Luke's Hospital, New York, Feb. 27. He was born Jan. 29, 1852, at St. Augustine, Fla., and was graduated from Sheffield Scientific School, Yale University, in 1871. From 1877 to 1899 he was a member of Dickerson, Van Dusen & Co., New York. In 1899 he became vice-president of the Tin Plate company, which office he held until 1909.

—

ANDREW C. CAMPBELL, president A. C. Campbell Co., Waterbury, Conn., and consulting engineer American Chain Co., died at his home in Waterbury, on Feb. 21. He was born in New York, 69 years ago. For some years he was connected with the Wheeler & Wilson Sewing Machine Co., Bridgeport, Conn., and the Farrel Foundry & Machine Co., Waterbury. For 16 years he was secretary and manager E. J. Manville Machine Co., leaving that concern in 1910 to organize his own company.

—

GRAHAM RHOADS, vice-president Winslow Boiler & Engineering Co., Chicago, died suddenly Feb. 23, in New York. In 1916 he organized the Winslow company and was its general manager until 1923. He is survived by Mrs. Rhoads and his mother.

—

THOMAS F. FLATLEY, aged 36, assistant superintendent Jones & Laughlin Steel Corporation's double storage department, Pittsburgh, died unexpectedly in his home in that city, Sunday, Feb. 21. Death was attributed to a heart attack. Mr. Flatley, a tenor, sang on the program from Station WJAS on the evening before his death.

—

ROBERT HOBSON, president Steel Co. of Canada, Ltd., Hamilton, Ont., died on Feb. 25, having suffered a stroke on the day previous. He was one of the leading figures in the iron and steel industry of Canada and the building up of the large enterprise of which he was the head was largely due to his ability. He was one of the pioneers in the production of pig iron in Canada. He began his business career as a railroad engineer. In February, 1896, he became secretary-treasurer of the Hamilton Blast Furnace Co., Hamilton, Ont., and, on the amalgamation of that company with the Ontario Rolling Mills Co., under title of the Hamilton Steel & Iron Co., was appointed secretary and assistant general manager of the new concern. In January, 1901, he was made vice-president and general manager. On the consolidation of the Hamilton Steel & Iron Co., the Canada Screw Co., Hamilton, the Canada Bolt & Nut Co., Toronto, the Montreal Rolling Mills and the Dominion Wire Companies of Montreal, under the name of the Steel Co. of Canada, he became vice-president and general manager, and a few years ago was made president. He was also a director of the Canadian Locomotive Co., Kingston, Ont.; the General Accident Assurance Co., Toronto; the Landed Banking Co., Hamilton, and a number of other Canadian corporations. He was a member of the American Institute of Mining and Metallurgical Engineers, and a director of the American Iron and Steel Institute, also a past-president of the Canadian Manufacturers' Association. Mr. Hobson was in his sixty-sixth year.

ROBERT HOBSON

—

CAPT. ELIAS GUNNELL, one of the founders of the Manitowoc, Wis., Shipbuilding Corporation, and identified with the Maritime Securities Co. and the Goodrich Transit Co., died Feb. 25, after a brief illness, at the age of 60. He was born near Dublin, Ireland, and came to America when 9 years old. Prior to going to Manitowoc, he was associated in executive capacities with the Wheeler Shipbuilding Co., Bay City, Mich., the Chicago Shipbuilding Co. and the Bath (Me.) Shipbuilding Co. Captain Gunnell is credited with the idea of applying pneumatic tools in the construction of steel hulls and developed a number of other methods now universally employed in this work.

—

MARTIN SCHEELER, president Buffalo Wire Corporation, died at his home in Buffalo March 1 after a week's illness. He was 63 years old. Mr. Scheeler was also a director of the Buffalo Galvanizing & Tinning Works.

Adopt Scrap Contract Form

Agreed at Washington Conference to Make It Effective July 1

WASHINGTON, Feb. 27.—The contract form for the sale and purchase of iron and steel scrap tentatively adopted for one year at the recent conference here on revised old material specifications is the standard form recommended by the National Association of Purchasing Agents and adopted in the fall of 1925 under procedure of simplified practice.

Under the division of "quantity," it was stated that in the case of the smaller purchasers they can say either tons or carloads in specifying. The destination of the shipping notice can be stated in the blank space provided. Regarding the clause giving the buyer, on written notice to the seller, the right to decline to receive tonnage not shipped as called for in the contract and to buy an equal tonnage in the open market charging the seller with any excess cost there may be, it is intended that the time of shipment be considered extended at the pleasure of the buyer in the absence of such notice.

Discussion centered about this clause and also the final one, "acceptance hereof to constitute contract as above stipulated." The point was raised as to practices arising under the contract. The following hypothetical case was cited: A buyer writes to a seller canceling an order and at the same time the latter telegraphs him regarding weights, or at least before the material reached its destination. The question was as to whether the cancellation would be accepted. In reply it was said that it is the practice that when a letter is mailed the cancellation becomes effective.

Like the revised scrap specifications, the form, which is 8½ x 11 in. in size, becomes effective July 1. Its clauses or "remarks" are as follows:

> Send shipping notices showing gross, tare and net weights direct to ..... and separate invoices (in duplicate) on each car shipped, to .....
>
> Contract number must be shown on each invoice and shipping notice.
>
> Cars arriving without a notice showing weights will be held pending disposition and car service charged to seller.
>
> Car service accruing after notice to seller of rejection shall be assumed by the seller.
>
> This material is purchased and sold subject to buyer's weight and inspection. Weight certificates to be furnished seller promptly on request. Bill of lading to be furnished buyer on request. Apparent shortages in excess of 1000 lb. per car to be reported to seller before unloading.
>
> If any of the material on this contract is not shipped as herein provided, the buyer may, on written notice to the seller, decline to receive such unshipped tonnage or buy an equal tonnage in the open market, charging the seller with the excess cost, if any. Until such notice is given, time of shipment will be considered as extended at the pleasure of the buyer.
>
> Acceptance hereof to constitute contract as above stipulated.

Strong Financial Statement

Youngstown Sheet & Tube Co. 1925 Report Shows $13,227,721 Net Earnings and $8,280,420 Surplus

From its 1925 manufacturing operations, the Youngstown Sheet & Tube Co., Youngstown, Ohio, added over eight millions to surplus, bringing that account, as of Dec. 31, 1925, to $33,382,246, according to the financial statement issued this week. The company reports net profits for the year, before providing for depreciation of plants and depletion of minerals, of $27,173,129. Dividends from investments, interest earned and other miscellaneous income brought total net profits to $29,969,849.

The company charged off for the year, for depreciation of plants and equipment, $7,978,647; for depletion of minerals, $1,045,230, and for special expenses and charges $1,665,117, leaving profits and income, before deducting interest charges and Federal income taxes, $19,280,855.

Deducting $4,302,369, representing interest and discount on funded and long-term debt, and interest on loans, and $50,764 for proportion of profits accruing to minority stockholders of subsidiary zinc companies, leaves $14,927,721. A provision of $1,700,000 was made for Federal income taxes, leaving net profits and income for the year of $13,227,721.

Dividends Took 37 Per Cent of Net Income

Dividends paid last year amounted to $4,947,301, including $996,877 on the 7 per cent preferred stock, and $3,950,424 on common stock, at the rate of $4 per year, leaving $8,280,420 available for surplus. The surplus account at the beginning of the year was $25,417,934, less $316,108, representing adjustment of depletion of mineral rights for prior years.

Consolidated balance sheet, as of Dec. 31, 1925, shows property accounts, $180,421,891; investments in and advances to mining and other companies, $11,122,637; balance due on employees' dwelling contracts, $867,517; sinking fund investments, $975,046; investments of insurance fund, $148,942; current assets of $81,898,045, including inventories of finished and semi-finished products, raw materials and supplies, $47,252,508; accounts and notes receivable, less reserve, $20,403,999; due from officers and employees, $99,105; marketable securities and United States treasury certificates of indebtedness (at or below market), $11,051,308; cash on hand, in banks and in transit, $3,091,125; an item of $2,511,345 represents deferred charges to operations, bond discount, prepaid taxes, insurance and other expenses paid in advance. Total assets are therefore placed at $277,945,423.

Capital Outstanding, $89,241,100

Capital stock structure shows 150,000 shares of outstanding preferred stock of $100 par value, for a total of $15,000,000; of this total, 7589 shares are unissued, leaving issued and outstanding, 142,411 shares of $100 par value each, or $14,241,100; the company has authorized, 1,000,000 shares of non-par-value common, of which 12,394 are unissued, leaving 987,606 shares issued, carried on the books at $75,000,000.

Funded debt outstanding totals $67,546,500. Current liabilities total $16,295,565 and include accounts payable of $8,407,671; ore received in excess of payments, $2,744,651; accrued interest, $1,861,493; accrued taxes, general, $1,580,784; Federal income taxes of $1,700,966.

The company has set up reserves of $71,085,552, including $57,764,418 for depreciation and renewal of plants; $8,472,262 for depletion of minerals; $2,592,734 for relining and rebuilding furnaces; $2,003,980 for contingencies, and the balance for insurance.

President Campbell on Outlook

In his annual statement to stockholders, issued in connection with the financial report for 1925, President Campbell says the outlook is encouraging. "General conditions abroad have improved. The railroads and the farmers have increased their buying power. There is no apparent accumulation of stocks in the hands of jobbers or fabricators. Money is plentiful and interest rates are low, and, with the proposed reduction in Federal taxes, this situation should continue. Labor is well employed and industry as a whole is prosperous.

"Considering the amount of capital invested," he added, "earnings for the year were small. They were, however, after making proper allowances for depreciation of plants and depletion of minerals, fairly satisfactory on the outstanding stock. The conservative dividend policy followed during the year makes it possible to pay for all plant improvements already made and construction now under way (costing approximately $20,000,000), without any additional financing, at the same time permitting reduction of bonded indebtedness $1,784,500."

Continental Steel Prices Weaken

Some Mills Willing to Shade—German Bolts Made with American Threads—Russia Inquires in Germany for Machinery

(By Cable)

LONDON, ENGLAND, March 1.

THE outlook is threatened by impending lockout of the engineering trades. Cleveland pig iron is quiet with decreasing sales, but prices continue firm as furnaces are all well booked with tonnage. Hematite is dull and with increased supplies available for prompt shipment values are easier. Foreign ore continues quiet, consumers delaying purchases until the coal outlook is cleared. Bilbao Rubio is still 21s. 3d. to 21s. 6d., c.i.f. Tees.

Finished steel demand is moderate, with domestic consumers most active in engineering, railroad and structural purchases. Export business is dull and new shipbuilding contracts are scarce. Plate quotations are easier by 2s. 6d., makers needing orders to continue present operations. The Clyde shipbuilding output in February was 13 vessels, totaling 34,000 tons.

Tin plate is quiet and prices steady. Galvanized sheets are steady with moderate activity in the heavy gages. Black sheets are dull. There is some small Japanese buying of light gage sheets at £14 5s. 6d., f.o.b., but the market is generally inactive.

Continental mills deny the report that a definite agreement has been reached in the negotiations to reestablish the International Rail Makers Association. The next meeting of the negotiators will be in Paris, March 10. Continental markets are subdued and the price situation complex. While most Belgian, French and Luxemburg works are still well filled with orders, low priced business is being accepted in some quarters. A recent sale of 3000 tons of merchant bars was made at £5 3s., f.o.b., but the market in general is £5 6s. 6d., f.o.b., and higher. Sheet bars have sold at £4 14s., f.o.b., and beams at £4 19s., f.o.b. A Japanese railroad has placed 4000 tons of rails in Germany. On Jan. 31 there were 84 furnaces in blast in Germany.

Russia Negotiates with German Makers for Manufacturing Equipment

(By Radiogram)

BERLIN, GERMANY, March 1.

Domestic conditions are unchanged but improvement is expected. Scrap is more active but the pig iron and steel syndicates announce unchanged prices and selling conditions for March and the latter continues its 35 per cent reduction of output. Export trade is somewhat more active.

An order to supply Russia on credit with 300,000,000 m. worth of equipment for oil production, mining and paper making as well as textile and agricultural machinery is under negotiation. German steel production increased slightly in January. Negotiations have been resumed for an international steel syndicate which would reduce production and divide export markets.

German Bolts and Nuts Being Made with American Threads

LÜBECK, GERMANY, Feb. 2.—To increase export sales of bolts and nuts several leading German makers have begun the manufacture of their product with United States standard threads. In the past German makers have not been successful in securing much of the foreign bolt and nut business in the markets dominated by American makers as in only a few instances were the German makers in a position to furnish American threads, producing only the Whitworth thread.

While most of the foreign consumers of bolts and nuts accept the Whitworth thread, the Philippines, Porto Rico, Cuba, Hawaii, St. Thomas, Panama, Costa Rica, Guatemala, San Salvador, Nicaragua and parts of Mexico generally specify the United States standard thread. As a result of the production by various German companies of American standard bolts and nuts, a

British and Continental European prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at $4.86 per £ as follows:

Durham coke, del'd	£1	1s.					$5.10		
Bilbao Rubio ore†	1	1½					5.22		
Cleveland No. 1 fdy.	3	12½	and	£3	13s.*		17.62	and	$17.74*
Cleveland No. 3 fdy.	3	10	and	3	10½*		17.01	and	17.13*
Cleveland No. 4 fdy.	3	9	and	3	9½*		16.77	and	16.88*
Cleveland No. 4 forge	3	8	and	3	8½*		16.52	and	16.65*
Cleveland basic	3	10	and	3	10½*		17.01	and	17.13*
East Coast mixed	3	17½	to	3	18		18.83	to	18.95
East Coast hematite	4	19					24.06		
Ferromanganese	15	10					75.33		
*Ferromanganese	15	5					74.12		
Rails, 60 lb. and up	7	5	to	8	0		35.24	to	38.88
Billets	6	0	to	7	10		29.16	to	36.45
Sheet and tin plate bars, Welsh	6	5					30.38		
Tin plates, base box	0	19¼	to	0	19¾		4.68	to	4.80
							C. per Lb.		
Ship plates	7	0	to	7	10		1.52	to	1.62
Boiler plates	11	0	to	11	10		2.39	to	2.49
Tees	7	5	to	7	15		1.57	to	1.68
Channels	6	10	to	7	0		1.41	to	1.52
Beams	6	5	to	6	15		1.35	to	1.46
Round bars, ¾ to 3 in.	7	15	to	8	5		1.68	to	1.79
Steel hoops	10	10	and	11	0*		2.28	and	2.49*
Black sheets, 24 gage	11	5	to	11	10		2.35	to	2.49
Black sheets, Japanese specifications	14	15					3.19		
Galv. sheets, 24 gage	16	0	to	16	5		3.47	to	3.52
Cold rolled steel strip, 20 gage	18	0					3.91		

*Export price.
†Ex-ship, Tees, nominal.

Continental Prices, All F.O.B. Channel Ports

Foundry pig iron: (a)							
Belgium	£3	2s.	to	£3	4s.	$15.06	to $15.55
France	3	2	to	3	4	15.06	to 15.55
Luxemburg	3	2	to	3	4	15.06	to 15.55
Basic pig iron: (a)							
Belgium	3	0	to	3	2	14.58	to 15.06
France	3	0	to	3	2	14.58	to 15.06
Luxemburg	3	0	to	3	2	14.58	to 15.06
Coke	0	18				4.37	
Billets:							
Belgium	4	11	to	4	12	22.11	to 22.36
France	4	11	to	4	12	22.11	to 22.36
Merchant bars:						C. per Lb.	
Belgium	5	6½	to	5	8	1.15	to 1.17
Luxemburg	5	6½	to	5	8	1.15	to 1.17
France	5	6½	to	5	8	1.15	to 1.17
Joists (beams):							
Belgium	4	19	to	5	2½	1.09	to 1.13
Luxemburg	4	19	to	5	2½	1.09	to 1.13
France	4	19	to	5	2½	1.09	to 1.13
Angles:							
Belgium	5	2	to	5	4	1.12	to 1.15
⅛-in. plates:							
Belgium	6	2	to	6	4	1.34	to 1.36
Germany	6	2	to	6	4	1.34	to 1.36
⅜-in. ship plates:							
Belgium	5	12	to	5	14	1.23	to 1.25
Luxemburg	5	12	to	5	14	1.23	to 1.25
Sheets, heavy:							
Belgium	6	3	to	6	4	1.35	to 1.37
Germany	6	3	to	6	4	1.35	to 1.37

(a) Nominal.

number of orders are reported to have been placed recently.

At present bolts are quoted, f.o.b. Hamburg or Bremen, at £41 per ton ($9 per 100 lb.) for ¼-in., £33 per ton ($7.28 per 100 lb.) for 5/16-in., £21 per ton ($4.63 per 100 lb.) for ⅜-in. and £15 15s. ($3.47 per 100 lb.) per ton for ½-in.

French Steel Market Unsteady

Belgian, Luxemburg and German Competition Keen—Pig Iron Market Still Strong

PARIS, FRANCE, Feb. 12.—While the franc has registered another decline in exchange value, it is doubted that this new downward movement will bring back much of the activity that prevailed in the fall of last year. Purchasing is light and prices, although generally at about the same level, have developed slight weakness in some markets. Mills, however, are still well booked with business and in most instances rolling schedules do not permit earlier than May delivery. Dealers who have purchased heavily in recent months are beginning to make drastic efforts to reduce their stocks to make room for the tonnages now being delivered. As a result, on sales out of warehouse, concessions have been made from the syndicate schedule.

In export trade mills are no longer enjoying the recent advantage provided by depreciated exchange and inability of other steel producing countries to compete. Strong competition is developing from Belgian and Luxemburg makers and Germany is returning as a factor in foreign trade. On a gold basis, it is pointed out by sellers, the present export prices are about 20 per cent lower than the pre-war export price level.

Pig Iron.—Production is increasing and as a result there is less complaint by domestic consumers that their minimum requirements are not being satisfied, despite the fact that furnaces have heavy export commitments. Nevertheless, the foundrymen's syndicate is understood to have requested an increase in the allotment of pig iron production for March of 15,000 tons, making the total 60,000 tons for that month. The advisability of such an increase is questioned in some quarters as it is pointed out that much of the February tonnage has not yet been delivered. The producers of phosphoric pig iron will meet this week to discuss the request of the foundrymen and probably to fix the price on pig iron for March. The new price is expected to be between 400 and 415 fr. per metric ton. There is a continued export demand but increased competition is maintaining the price at 335 fr. (Belgian), $15.20 and 415 fr. (French), $15.23 for No. 3 foundry. Producers of hematite iron are sold out for February and March and at a recent meeting agreed to an increase of 25 fr. per ton on all grades of hematite and on spiegeleisen. Negotiations for renewal of the entente of hematite iron producers are being continued.

Semi-Finished Material.—Prices vary considerably, depending upon the mill and its tonnage requirements. Some mills which are well booked with business are seeking small tonnages of certain sizes to complete rolling schedules. In most cases May is the earliest delivery offered. Blooms are more easily obtainable at 500 fr. per ton ($18.35) and billets as low as 550 fr. per ton ($20.18). For export, blooms continue weak at £4 1s. to £4 2s. per ton ($19.68 to $19.92), f.o.b. Antwerp, but billets are quite firm at £4 9s. to £4 9s. 6d. ($21.62 to $21.75), f.o.b. Antwerp. Largets are unchanged at £4 14s. to £4 15s. ($22.84 to $23.08), f.o.b Antwerp.

Finished Material.—Much the same situation prevails in bars and shapes. In most instances May is the earliest delivery offered, but certain sizes are obtainable where mills are seeking to complete rolling schedules. Bar prices are well maintained at 680 to 700 fr. ($24.95 to $25.70) per metric ton, with the possibility of 650 fr. ($23.85) being done on especially desirable business. The export price is not particularly strong at £5 6s. 6d. ($25.88), f.o.b. Antwerp. The minimum on beams is apparently 600 to 610 fr. ($22.02 to $22.38) per metric ton, but only on desirable orders. Export prices are unchanged at £4 17s. 6d. to £4 18s. 6d. ($23.75 to $23.95), f.o.b. Antwerp.

Sheets.—The market on heavy gages is somewhat easier with a fair tonnage of available supplies. Medium and light gages are also less in demand and easily secured. The export price, however, continues firm at about £5 10s. per ton ($26.73), f.o.b. Antwerp, on the medium gages.

Wire Rods.—Both domestic and export demand is good and prices are being maintained at 720 to 750 fr. $26.42 to $27.52) per metric ton, f.o.b. works, and for export at about £5 16s. ($28.18), f.o.b. Antwerp.

Belgian Buyers Await Reductions

Order Books Depleted, Mills Are Beginning to Consider Shading—Exporters' Offers Low

ANTWERP, BELGIUM, Feb. 10.—Operations in the Charleroi district are rapidly approaching normal with the number of men still on strike greatly reduced and most of the rolling mills producing at close to the normal schedule. There is still a lack of confidence in the future and purchasing is confined to immediate needs. Buyers point out that activity will be stimulated only by a reduction in prices, while there is evidently a belief among sellers that a slight upward movement of prices would bring out increased buying. Developments in the market, however, tend to favor the buyer's viewpoint, for, although prices have been fairly well maintained thus far, as a result of well-filled order books, the dearth of new business is beginning to exercise a weakening effect. With the mills more and more willing to discuss prices with the object of offering slight concessions on desirable specifications, buyers are becoming still more reserved in their purchases. The reentry of the Charleroi mills into the market was carefully calculated to prevent the sudden decline that had been expected, but the protracted abstention of consumers may yet cause a lower level of prices, unless the activity of British purchasers is maintained at a high level, as now seems possible.

Pig Iron.—The market is strong and prices are being maintained at a high level, with a good export demand in addition to heavy domestic requirements. No. 3 phosphoric foundry iron is quoted at about 350 fr. per metric ton to domestic consumers and about $15.90 per ton, c.i.f. Antwerp, for export.

Semi-Finished Material.—Prices continue firm, but new business is not developing in any volume as the offers of buyers are generally too low to interest the makers. Available stocks, however, are small, so that no distinct weakness is in evidence, with the possible exception of blooms, which are offered as low as £4 1s. to £4 2s. ($19.65 to $19.90) per metric ton, f.o.b. Antwerp. Billets are quoted at about £4 11s., f.o.b. Antwerp ($22.10), and slabs continue at £4 15s., f.o.b. Antwerp ($23.10).

Finished Material.—As a result of the shortage of new business, a slight tendency to weakness is developing. Makers' order books are not at all well filled and the return of the Charleroi mills has undoubtedly exercised a slight depressing effect, as there was some tendency to concession in order to secure a backlog. Consumers seem convinced that lower prices will appear before long and continue to delay purchases while mills still endeavor to maintain the present price level. On bars exporters have been offering to pay $26 per ton, f.o.b. Antwerp, while the quotation of the mills is generally $26.15 to $26.30 per ton. Exporters claim that the return to competition of German makers makes it impossible for them to secure foreign business at more than $26 per ton. Beams are quoted at £4 17s. 6d., f.o.b. Antwerp ($23.70); wire rods at £5 15s. per ton ($28.20), and corrugated bars at £5 14s. per ton ($27.95).

Rails.—Rail makers are practically out of the market and quoting prices considerably too high for export.

Exports Heavier Than Last Year

Seven-Months Total Increased 11 Per Cent—Imports Up 60 Per Cent, Mainly in Pig Iron

WASHINGTON, March 1.—Aggregating a total of 174,585 gross tons, exports of iron and steel in January, 1926, were the largest since August, 1925, when foreign shipments amounted to 188,963 tons. Imports in January, 1926, totaled 79,067 tons, a drop of more than 19,000 tons under December, 1925. This decrease in incoming movement is shown despite the fact that additional items are carried in the import table as a result of reclassification of iron and steel and other schedules, beginning January, 1926, by the Bureau of Foreign and Domestic Commerce. However, the new items added represent relatively light tonnage and the change itself was largely in the direction of breaking up old classifications which were of a general nature and dividing them into more specific terms. This has been done both for the sake of clarity and on account of the increased interest in the import movement, which is growing in a number of lines.

The striking gain in imports is shown by a comparison of those for the seven months ended January, 1926, amounting to 547,739 tons, as against 342,582 tons for the corresponding period ended January, 1925. The net increase on account of added items itself is not much. The principal gain is shown in the import movement of pig iron, which increased 123,305 tons.

Another outstanding increase was in imports of structural shapes. The comparison of the seven-month table is not wholly complete because, as in the instance of steel bars, the imports of this item were not shown separately until January, 1925, and therefore are not reflected except for that one month during the seven-month period of one year ago, while this class of imports is shown completely for the seven months ended January, 1926.

Following the usual course, pig iron constituted the largest item of imports in January, with a total of 48,423 tons. The United Kingdom was the greatest single source of pig iron imports, supplying 15,833 tons, while British India ranked second, with 9329 tons. Of the imports of steel bars, amounting to 6729 tons, Belgium supplied the greatest quantity, with a total of 3850 tons, while Sweden ranked second, with 632 tons. Other sources of steel bar imports in January were France, 580 tons; Netherlands, 551 tons; Czechoslovakia, 505 tons; Germany, 380 tons; and the United Kingdom, 178 tons.

Imports of hoops, bands and scrolls, including cotton ties, a new item in the table, amounted to 921 tons in January. The credited sources of this tonnage were as follows: Belgium, 530 tons; Netherlands, 186 tons; and Germany, 105 tons. It is assumed that Germany is actually the source of some of the steel tonnage credited to the Netherlands, in this as in other items.

Rail imports in January amounted to 1417 tons, incoming shipments of splice bars being only 18 tons. Of the rail imports, Germany provided 903 tons and Belgium 329 tons. Imports of cast iron pipe amounted to 2005 tons, of which 1027 tons came from France and 978 tons from Belgium. Of imports of structural shapes, amounting to 5093 tons in January, 4974 tons were plain material. Of the latter 3229 tons came from Belgium; 786 tons from Netherlands; 590 tons from France and 358 tons from Germany.

The largest source of all imports in January was the United Kingdom, which supplied 18,261 tons. Bel-

Exports of Iron and Steel from the United States

(In Gross Tons)

	January		Seven Months Ended January	
	1926	1925	1926	1925
Pig iron	1,663	1,298	23,134	19,658
Ferromanganese	30	1,189	1,446	1,313
Scrap	6,397	2,577	45,873	29,773
Pig iron, ferroalloys and scrap	*8,090*	*5,064*	*70,453*	*50,744*
Ingots, blooms, billets, sheet bar, skelp	3,208	2,432	59,410	59,209
Wire rods	1,180	3,332	9,441	10,317
Semi-finished steel	*4,388*	*5,764*	*68,851*	*69,526*
Steel bars	11,070	8,469	67,247	49,447
Alloy steel bars	463	317	1,848	1,420
Iron bars	194	387	2,023	2,144
Plates, iron and steel	9,102	5,095	59,724	37,450
Sheets, galvanied	16,408	28,326	87,963	84,400
Sheet, black steel	13,638	9,248	71,560	74,351
Sheets, black iron	1,709	759	10,284	6,430
Hoops, bands, strip steel	4,663	2,270	25,815	16,542
Tin plate, terne plate, etc.	21,143	19,416	64,747	82,077
Structural shapes, plain material	10,049	6,851	71,121	62,285
Structural material, fabricated	9,278	5,435	49,779	39,386
Steel rails	9,198	10,567	85,291	115,458
Rail Fastenings, switches, frogs, etc.	3,996	1,974	22,686	17,914
Boiler tubes, welded pipe and fittings	32,959	14,461	162,005	105,964
Plain wire	2,591	3,086	19,050	15,544
Barbed wire and woven wire fencing	5,442	6,053	39,384	54,220
Wire cloth and screening	124	126	1,162	796
Wire rope	458	398	2,509	2,537
Wire nails	932	754	6,613	6,147
Other nails and tacks	751	788	5,344	4,792
Horseshoes	48	74	420	496
Bolts, nuts, rivets and washers, except track	1,004	1,269	9,544	10,547
Rolled and finished steel	*155,220*	*126,123*	*866,119*	*790,347*
Cast iron pipe and fittings	2,481	1,575	19,966	16,384
Car wheels and axles	2,119	1,014	10,751	13,134
Iron castings	699	727	6,546	4,708
Steel castings	357	448	1,858	2,724
Forgings	148	87	1,155	838
Castings and forgings	*5,804*	*3,851*	*40,276*	*37,788*
All other	1,083	....	7,589	....
Total	174,585	140,802	1,053,288	948,405

Exports of Iron and Steel in Gross Tons

	All Iron and Steel	Pig Iron	Semi-Finished Material
*Average, 1912 to 1914	2,406,218	221,582	145,720
*Average, 1915 to 1918	5,295,333	438,462	1,468,020
*Average, 1919 to 1923	3,078,724	123,837	149,218
January, 1924	249,125	3,812	8,594
February	165,892	4,773	11,463
March	124,753	4,047	2,278
April	132,739	4,117	8,275
May	155,305	4,317	4,895
June	165,034	2,057	11,178
Fiscal year 1924	2,009,343	40,596	119,744
July	138,794	1,796	10,363
August	135,989	4,365	6,127
September	133,540	4,799	15,473
October	158,560	3,373	15,569
November	124,464	1,478	8,649
December	129,443	2,549	7,081
Calendar year 1924	1,805,073	41,478	114,417
January, 1925	141,777	1,298	5,764
February	102,299	1,413	7,516
March	155,384	2,037	7,951
April	155,375	1,632	6,831
May	150,612	2,316	7,360
June	136,847	2,507	7,804
Fiscal year 1925	1,663,084	29,563	107,988
July	139,861	2,348	10,761
August	188,465	5,944	8,024
September	136,791	3,349	8,186
October	141,817	2,874	8,432
November	171,134	4,272	16,783
December	142,209	2,626	12,282
Calendar year 1925	1,762,571	32,674	108,681
January, 1926	174,585	1,663	4,388
Seven months	1,053,288	23,134	68,851

*Calendar years.

gium ranked second, with 12,945 tons, and Germany third, with 12,101 tons. These three accounted for 55 per cent of the total.

The outstanding gain in exports in January was in boiler tubes and welded pipe, the total for that month having been 32,052 tons as against only 17,207 tons in December. Of the January export movement in tubular products, 19,298 tons consisted of casing. The great bulk of this tonnage went to South America. Argentina took 5643 tons; Venezuela, 5250 tons; Peru, 2412 tons; Dutch East Indies, 2197 tons, and Colombia, 1475 tons.

Another substantial gain in January over December was in exports of tin plate. Of the 21,143 tons shipped abroad in January, Japan took 7272 tons, while India took 4034 tons and Canada 3258 tons. Exports of galvanized sheets in January totaled 16,408 tons, which were widely distributed in world markets. The largest single consuming country for the month was the Philippine Islands, which took 3029 tons.

As usual, Canada was the principal destination of iron and steel exports, taking 54,966 tons, while Japan ranked second with 21,628 tons. The total movement to South American countries represented a large volume, Argentina taking 9182 tons; Chile, 7611 tons; Colombia, 7219 tons, and Venezuela, 6944 tons. Shipments to Cuba totaled 7191 tons.

*Imports of Iron and Steel Into the United States

(In Gross Tons)

	January		Seven Months Ended January	
	1926	1925	1926	1925
Pig iron	48,423	41,344	259,682	136,377
Ferromanganese	2,631	6,729	36,681	34,168
Ferrosilicon	424	476	2,197	5,140
Scrap	2,961	14,113	52,508	51,299
Pig iron, ferroalloys and scrap	*54,439*	*62,662*	*351,068*	*226,984*
Steel ingots, blooms and slabs	1,939	985	11,262	18,025
Iron ingots and slabs	.....	.....	779	.....
Wire rods	1,173	470	4,756	2,738
Semi-finished steel	*3,112*	*1,455*	*16,797*	*20,763*
Rails and splice bars	1,435	3,770	15,097	25,842
Structural shapes	5,093	4,316	40,012	29,094
Boiler and other plates	271	60	973	739
Sheets and saw plates	709	434	2,276	1,929
Steel bars	6,729	2,535	37,225	**2,535
Bar iron	64	678	3,950	2,671
Hoops, bands and scrolls	921	300	5,737	**300
Cast iron pipe	2,005	350	36,966	22,643
Other pipe and tubes	2,251	302	22,276	
Nails, tacks and staples	22	54	2,305	263
Tin plate	2	.....	258	186
Bolts, nuts and rivets	1	16	55	83
Barbed wire	920	.....	4,753	.....
Round iron and steel wire	287	143	2,423	1,452
Flat wire and strip steel	216	134	1,328	1,009
Steel telegraph and telephone wire	.....	99	133	5,035
Wire rope and strand	52	49	735	
Other wire	162	.....	569	
Wire cloth and screening	12	23	232	**23
Rolled and finished steel (a)	*21,152*	*13,263*	*177,303*	*93,804*
Castings and forgings	364	112	1,651	1,354
Horseshoes	.....	44	.....	**44
Total	79,067	77,536	546,819	342,949

**Includes January, 1925, only.

(a) Prior to January, 1926, this includes some cast iron pipe, under the heading "tubular products."

Manganese ore	‡37,498	15,498	‡221,163	110,524
Iron ore	202,332	174,398	1,330,108	1,300,785
Magnesite	‡‡13,336	2,549	29,989	20,494

‡Manganese content only.

‡‡Dead burned only.

*Beginning with January, 1926, the Bureau of Foreign and Domestic Commerce has reclassified its schedules of both imports and exports. Changes in the import table on iron and steel were in the direction of amplification by breaking up groupings more or less general into specific items, although some items previously carried miscellaneously but not reflected in published tables have been added. THE IRON AGE has rearranged its import table accordingly, so that it corresponds with that of the Iron and Steel Division, as it did previously, but has kept intact its export table, in which no change of importance was made. In the import table new classes include iron ingots and slabs; hoops, bands and scrolls, embracing cotton ties; barbed wire; wire cloth and screening; horseshoes; "other wire," including covered or insulated wire, corset and dress steel and galvanized fencing wire. The old classification "wire rope and insulated wire" is broken up into "steel and telegraph wire" and "wire rope and strand." The old classification of "tubular products" has been broken up into cast iron pipe and "other pipe and tubes," the latter including welded pipe or jointed pipe, electrical conducts, ball-bearing and other tubes. Cylindrical or tubular tanks have been dropped, having been transposed to a basis by value rather than by quantity.

Imports Into the United States of Iron and Steel Products for January, 1926, by Countries

(In Gross Tons)

Austria	21	Canada	5,387
Belgium	12,945	Mexico	34
Czechoslovakia	545	British West Indies	103
France	7,721	Cuba	16
Germany	12,101	Dominion Republic	62
Lithuania	1,530	British India	9,329
Netherlands	8,989	China	1
Norway	24	Japan, including Chosen	1
Sweden	1,996		
Switzerland	1		
United Kingdom	18,261	Grand total	79,067
Total, Europe	64,134		

Sources of American Imports of Iron Ore

(In Gross Tons)

	January		Seven Months Ended January	
	1926	1925	1926	1925
Spain	15,780	12,620	63,677	58,161
Sweden	.....	14,832	105,744	241,391
Canada	517	126	4,972	3,208
Cuba	50,000	48,750	298,612	149,048
Chile	119,300	63,900	740,000	705,875
French Africa	15,600	26,795	78,675	126,489
Other countries	1,135	7,375	38,428	16,613
Total	202,332	174,398	1,330,108	1,300,785

Imports of Pig Iron in January, 1926, by Countries

(In Gross Tons)

United Kingdom	15,833	Lithuania	1,530
British India	9,329	Belgium	930
Germany	8,395	Canada	540
Netherlands	7,173	Sweden	30
France	4,663	Total	48,423

Imports of Iron and Steel in Gross Tons

	Total Imports	Pig Iron	Ferro-alloys	Manganese Ore and Oxide*
January, 1924	29,472	10,587	3,033	23,081
February	42,318	15,482	4,847	4,430
March	39,273	16,919	3,941	46,067
April	51,063	17,171	7,371	29,729
May	66,804	25,220	5,501	31,993
June	60,580	28,697	2,347	24,726
July	32,010	13,511	1,435	12,287
August	44,926	16,189	1,120	16,160
September	45,221	16,347	3,578	6,269
October	40,879	10,963	8,608	12,088
November	34,987	9,880	7,596	19,919
December	69,281	28,143	10,530	28,305
Calendar year 1924	556,814	209,109	59,910	255,157
January, 1925	77,105	41,344	7,165	15,498
February	92,353	47,803	10,997	9,666
March	92,115	50,803	5,691	24,330
April	71,233	33,299	7,699	14,941
May	67,789	21,260	8,721	29,139
June	82,853	35,657	4,259	20,720
Fiscal year 1925	749,393	325,199	77,291	186,939
July	64,642	24,881	3,601	28,586
August	68,489	30,707	3,526	34,168
September	68,445	29,917	3,594	22,709
October	80,045	37,709	11,226	23,054
November	79,771	34,712	6,173	33,238
December	98,400	53,333	7,703	36,908
Calendar year 1925	943,240	441,425	80,269	265,688
January, 1926	79,067	48,428	3,055	37,498
Seven months	547,739	259,682	38,878	221,163

*Not included in "total imports." These figures are for manganese contents of the ore.

Machinery Markets and News of the Works

BUSINESS IMPROVED

Larger Demand for Machine Tools Develops in Last Week of February

Railroad Buying at Chicago Conspicuous Among the Larger Purchases—Chicago & North Western Closes on List

MACHINE tool buying gained perceptibly in the last week of February and the prospects that have been accumulating indicate that March business will bring a further increase. One of the largest purchasers of the week was the Chicago & North Western Railroad, which placed orders in Chicago for a good-sized list of tools and the Central of Georgia has also bought a list of tools. Other railroads which are expected soon to place orders covering fairly substantial amounts of equipment are the Santa Fe, Rock Island, Illinois Central, Florida East Coast and New York Central. The Delaware & Hudson has a small list pending.

Manufacturers in diversified industrial lines have been active buyers of shop equipment. A Cincinnati machine tool builder reports that his February orders came from a greater variety of industries than at any time since 1920.

The Lycoming Mfg. Co., Williamsport, Pa., has bought 13 upright drills and five sensitive radial drills. The Boyes & Emmes Co., Cincinnati, which is rebuilding a plant destroyed by fire, has bought a number of tools and will expend a total of about $75,000. The Century Electric Co., St. Louis, bought eight lathes and several shapers. The Nash Motors Co. has purchased a number of tools for its Kenosha, Racine and Milwaukee plants.

New York

NEW YORK, March 2.

THERE has been a good volume of inquiry and purchase of machine tools during the past week. Most of the actual buying was evidently in the heavier tools, but inquiry for smaller machines has been accumulating with the prospect that March will see greater activity in this field. Of the railroad inquiries in the market, the New York Central closed during the week on two 32-in. upright drill presses with different makers. The list of the Delaware & Hudson Railroad, which includes a lathe, a shaper and a large shear, will probably not be acted upon before the latter part of March.

Industrial users of machine tools continue to be widely represented in the purchase of single pieces of equipment. In the New York district the United States Metals Refining Co., New York, has closed on a clip riveting machine; Monroe Calculating Machine Co., Orange, N. J., a 13-in. geared head lathe; Westinghouse Electric & Mfg. Co., Springfield, Mass., 13-in. geared head lathe and a vertical surface grinder; R F. Products Co, Brooklyn, two 10-in. automatic milling machines; Hartford Machine Screw Co., Hartford, Conn., two 10-ton automatic milling machines and an automatic centering machine; Imperial Knife Co., Providence, R. I., four hand screw machines; United Shoe Machinery Co., Beverly, Mass., a vertical profiling machine; Kraeuter & Co., Newark, N. J., two automatic milling machines; the Wallace Barnes Co., Bristol, Conn., two bench lathes; Waltham Watch Co., Waltham, Mass., one bench lathe

Among industrial purchasers in other territories during the past week are the Pullman Car & Mfg. Corporation, Chicago, a journal turning and axle lathe; General Electric Co., a jig boring machine for Cleveland; a jig boring machine and vertical shape for the Remy Electric Division of the General Motors Corporation; F. J. Schwabe & Son, Fort Wayne, Ind., and the Tokheim Oil Tank & Pipe Co., Fort Wayne, Ind., each a vertical profiling machine; city of Milwaukee, a 16-in. geared head lathe; the Link Belt Co., Indianapolis, Universal Crane Co., Elyria, Ohio, and the National Pipe Products Co., Rochester, Pa., each a hard milling machine.

Jacob J. Schmukler, 149 Canal Street, New York, jewelry manufacturer, has plans for extensions and improvements in his factory to cost about $10,000. George F. Pelham, 200 West Seventy-second Street, is architect.

The A. C. Chesley Co., 704 East 133rd Street, New York, manufacturer of metal-covered and other fireproof doors and allied products, will build a two-story plant at Walnut Avenue and 135th Street, 125 x 145 ft., to cost approximately $125,000 with equipment. Patrick J. Murray, 141 East Fortieth Street, is architect.

The superintendent of lighthouses, Staten Island, N. Y., is asking bids until March 9 for 300 steel cylinders for compressed acetylene gas, each with capacity of 180 ft. when full.

The Board of Education, Greenwich, N. Y., is considering the installation of manual training equipment in its proposed two-story high and grade school to cost $165,000, for which plans are being drawn by Tooker & Marsh, 101 Park Avenue, New York, architects.

Shape, Bready & Peterkin, Inc., 50 East Forty-second Street, architect and engineer, have plans under way for a nine-story automobile service, repair and garage building, 100 x 175 ft., at 337-49 West Forty-ninth Street, to cost about $700,000 with equipment.

The New York Edison Co., 130 East Fifteenth Street, New York, is having plans prepared by T. E. Murray, Inc., 55 Duane Street, architect and engineer, for a seven-story service and operating building at Fourteenth Street and Avenue D, to cost approximately $1,000,000 with equipment.

The Pure Ice Corporation, Hudson, N. Y., will erect a two-story ice-manufacturing plant in the Industrial Tract district, 36 x 50 ft., to cost about $35,000 with equipment. V. DeProsse, South Fourth Street, Hudson, is architect.

The Lotus Oil & Distributing Corporation, 50 East Forty-second Street, New York, has acquired property on Newtown Creek, Long Island City, and will erect a new oil storage and distributing plant to cost in excess of $75,000. Frederick Meister, 534 West Fifty-sixth Street, is company engineer. Joseph McCarthy is president.

The Kalten Machine Works, 59 Academy Street, Jersey City, N. J., has had plans drawn by H. J. Nurick, 44 Court Street, Brooklyn, architect, for a two-story factory, 80 x 100 ft., at 166-170 Thirty-fourth Street, Brooklyn, to cost $27,000 with equipment.

The McAvoy Homes, Inc., Long Island City, care of William D. Bloodgood & Co., Bridge Plaza, Long Island City, has acquired a plant on Conklin Street, Farmingdale, L. I., totaling 50,000 sq. ft., for a new factory to manufacture building materials for McAvoy homes, a patented type of standardized construction. The company also contemplates the early establishment of a new plant at New Orleans for similar production.

The Brooklyn Edison Co., 360 Pearl Street, Brooklyn, is said to be considering the erection of a new automatic power substation in the Erie Basin district to cost about $125,000.

A steam power house will be constructed by the Keystone Varnish Co., 71 Otsego Street, Brooklyn, at its proposed new plant at Newark, N. J. The entire project will cost close to $360,000. Fletcher-Thompson, Inc., 350 Madi-

The Crane Market

NEW inquiries for overhead cranes continue few in number but slightly more activity is evident in the locomotive crane field, with contractors among the prospective purchasers. Among the inquiries for overhead cranes of the Phoenix Utility Co., 71 Broadway, New York, the 100-ton gantry crane for installation in a new plant in the West, has been included in the general contract, bids on which opened March 2. It is understood that the six or more 1-ton hand power cranes for Crocker, Burbank & Co., Fitchburg, Mass., will close shortly. The Anglo-Consolidated Chilean Nitrate Corporation, 120 Broadway, has closed with the Bucyrus Co. on four large electric shovels to handle 5-cu. yd. of material.

In the Pittsburgh district the McClintic-Marshall Co. is inquiring for 21 cranes ranging from 5 tons to 30 tons in capacity and with spans of from 30 ft. to 90 ft.

Among recent purchases are:

Baldwin Locomotive Works, Philadelphia, eleven 25-ton and one 50-ton overhead crane bridges for Eddystone plant from the Niles-Bement-Pond Co. and four 7½-ton wall cranes for Eddystone, from the Milwaukee Electric Crane & Mfg. Corporation.

New England Power Co., Worcester, Mass., a 35-ton power house crane for Monroe Bridge, Mass., from the Northern Engineering Works.

Parker & Graham, Paterson, N. J., a 12-ton crawl-tread locomotive crane from the Industrial Works.

Dominion Bridge Co., Ltd., Montreal, a 40-ton, 90-ft. boom, used Industrial locomotive crane from Philip T. King, 50 Church Street, New York, and two 20-ton used American Hoist & Derrick Co. cranes for Lachine, Que., from A. R. Gelinas, 5614 Sherbrooke Street, West, Montreal.

Manitoba Pulp & Paper Co., Winnipeg, Man., a 14-ton, used Link-Belt crawl tread locomotive crane from Philip T. King, New York.

Quinlan, Robertson & Janin, Ltd., Montreal, a used Erie combination steam shovel and crane from A. R. Gelinas, Montreal.

Northern Construction Co., Ltd., Montreal, a 20-ton used Brownhoist locomotive crane from A. R. Gelinas, Montreal.

Texas Construction Co., Dallas, Tex., a 30-ton locomotive crane from the American Hoist & Derrick Co.

Naniwa Boyeki Shokai, Osaka, Japan, a 2-ton, 40-ft. lift, cab control electric hoist for Osaka Arsenal from the American Engineering Co., Philadelphia.

Chicago & North Western Railroad, a 3-ton, 31-ft. 6-in. span, 3-motor gantry crane through Page & Ludwick, Chicago, from the Milwaukee Electric Crane & Mfg. Corporation.

Owen Bucket Co., Cleveland, a 10-ton, 45-ft. span electric traveling crane from the Harnischfeger Corporation.

Ford Motor Co., Detroit, four 60-ton locomotive cranes from the McMyler-Interstate Co.

United States Aluminum Co., Cleveland, a 3-ton overhead crane from the Northern Engineering Works.

Illinois Steel Co., two 20-ton overhead cranes with 5-ton auxiliaries, one 5-ton single trolley and two 5-ton double trolley cranes and three 7½-ton double trolley cranes for Gary, Ind., from the Alliance Machine Co.

Farrel Foundry & Machine Co., Ansonia, Conn., one 40-ton overhead crane from the Shaw Electric Crane Co.

Erie Railroad, New York, a combination locomotive crane and pile driver, from the American Hoist & Derrick Co.

Chicago & North Western Railroad, Chicago, a 3-ton bucket handling gantry crane and a 5-ton, 47-ft. span, 3-motor overhead crane from the Milwaukee Electric Crane & Mfg. Co.

Allied Steel Castings Co., Harvey, Ill., a 5-ton, 53-ft. span, 3-motor, overhead crane from the Whiting Corporation.

Weirton Steel Co., Weirton, W. Va., a 100-ton, 80-ft. span ladle crane and a 5-ton charging crane from the Morgan Engineering Co.

Tyler Tube & Pipe Co., Washington, Pa., a 10-ton, 76-ft. span overhead crane from the Shaw Electric Crane Co.

Westinghouse Electric & Mfg. Co., Sharon, Pa., a 5-ton, 50-ft. span crane from the Whiting Corporation.

Chicago Bridge & Iron Co., Greenville, Pa., a 15-ton crane from the Alliance Machine Co.

Jones & Laughlin Steel Corporation, Woodlawn, Pa., two 15-ton overhead cranes from the Cleveland Crane & Engineering Co.

Standard Sanitary Mfg. Co., New Brighton, Pa., a 5-ton overhead crane from the Cleveland Crane & Engineering Co.

Pittsburgh Crucible Steel Co., three 15-ton overhead cranes from an eastern Ohio builder.

son Avenue, New York, and Bridgeport, Conn., is architect and engineer.

The Michigan Artificial Ice Products Corporation, 101 Real Estate Exchange Building, Detroit, will soon begin superstructure for its proposed three-story ice-manufacturing plant, 110 x 150 ft., at Germantown, N. Y., estimated to cost $125,000 with equipment. A cold storage department will be installed.

C. B. Cook, Trust Company Building, Asbury Park, N. J., architect, will take bids on revised plans for a three-story automobile service, repair and garage building, 100 x 150 ft., to cost $175,000 with equipment.

The Erie Railroad Co., 50 Church Street, New York, has plans under way for a ten-story freight distributing plant at Monmouth, Coles, Eleventh and Twelfth Streets, Jersey City, N. J., to cost $3,500,000 with material-handling, elevating and other mechanical equipment. It will have a capacity for handling 450 cars of freight every 24 hours.

The Ingram-Richardson Mfg. Co., Beaver Falls, Pa., manufacturer of enameled iron signs and kindred metal goods, will erect an addition to its plant at Bayonne, N. J., to cost about $35,000. Henry D. Scudder, Jr., 9 Clinton Street, N. J., is architect and engineer.

The Syndicate Toy & Novelty Co., Newark, has leased space in the building at 181-89 Chestnut Street, and will establish a new plant for the manufacture of metal toys and novelties. The company has acquired the business and equipment of A. Gropper, 423 East Twenty-fourth Street, New York, toy manufacturer, and will remove to the Newark location. Samuel Hoffman is vice-president and general manager.

The Board of Public Works, South Amboy, N. J., will receive plans early in March for the proposed electrification of the municipal waterworks, and will arrange for immediate approval and call for bids.

The Atlantic Tank & Barrel Corporation, Grand Avenue and Fourteenth Street, Hoboken, N. J., has awarded a general contract to Walter Kidde & Co., 140 Cedar Street, New York, for a new one-story plant, 120 x 180 ft., at North Bergen, N. J., to cost about $60,000. A. B. Miller, 90 West Street, New York, is architect.

Wondersigns, Inc., Newark, recently organized to manufacture metal and other sign novelties, has leased the one-story factory at 244-46 South Street for a new plant. T. W. Jefferson is vice-president.

The Curvfit Razor Co., Inc., 71 West Twenty-third Street, New York, has been incorporated with 100,000 shares of no par value and will manufacture a curved safety razor for women.

The Stein-Brill Corporation, 25 Church Street, New York, has been organized to deal in new and second-hand chemical and allied equipment. The company will make a specialty of buying complete plants for liquidation purposes. L. I. Brill is president and J. D. Stein is secretary and treasurer.

The Excel Foundries, Lebanon, N. J., has been incorporated to manufacture gray and white iron castings, also grinding mills and crushers. A new shop has recently been built.

Philadelphia

PHILADELPHIA, March 1.

THE Precision Grinding Wheel Co., 8301 Torresdale Avenue, Philadelphia, has taken out a permit to build a one-story addition.

The Water Bureau, Philadelphia, will soon begin the proposed electrification of the Torresdale pumping station, to include the installation of additional equipment. Alexander Murdoch is chief of the bureau, in charge. The work will cost about $200,000 and will be carried out in connection with a waterworks expansion program to cost $5,000,000. Tentative plans are under consideration for the installation of a 300-million gal. capacity pumping plant at the sewage treatment works, to cost about $500,000.

The Susquehanna Power Co., an interest of the Philadelphia Electric Co., Tenth and Chestnut Streets, Phila-

delphia, has secured permission to proceed with the construction of its proposed hydroelectric power project at Conowingo, Md., on the Susquehanna River, to develop a total of 300,000 hp. The station, with transmission system, will cost more than $25,000,000. It is expected to begin work early in the spring.

The Advance Machine & Foundry Co., Glassboro, N. J., recently organized by Charles Peterman and associates, is asking bids for a one-story foundry and machine shop to cost $75,000 with equipment. The Glassboro Business Men's Association is interested in the project.

The Public Service Electric & Gas Co., Public Service Terminal, Newark, N. J., will soon begin work on a new automatic power substation at Trenton, N. J., to cost $85,000 with equipment. The project will be carried out by the Public Service Production Co., an affiliated organization.

The Pacific Steel Boiler Corporation, Waukegan, Ill., has work in progress on its proposed branch plant at Bristol, Pa., and expects to have the initial units ready for service early in the spring. The company was formed recently to take over the General Boilers Corporation. O. T. Nelson is president.

Officials of the Pennsylvania Power & Light Corporation, Allentown, Pa., are forming three subsidiary organizations, to be known as the Pittston-Luzerne Power & Light Co., Exeter-Luzerne Power & Light Co., and the Duryea Borough-Luzerne Power & Light Co., to operate electric light and power properties in the different townships for which named. P. B. Sawyer heads the organizations.

The International Motor Co., Allentown, Pa., manufacturer of motor trucks, has plans for a one-story addition, 600 x 800 ft., to cost about $450,000 with equipment. Headquarters are at 25 Broadway, New York.

The Borough Council, West Chester, Pa., has plans for an addition to the municipal pumping plant in the southwest district, with the installation of additional equipment. It will cost about $35,000. Remington & Vosbury, 509 Cooper Street, Camden, N. J., are engineers.

Fire, Feb. 21, destroyed a portion of the coal washery of the Cornwall Coal Co., Pittston, Pa., with loss reported at $200,000 including equipment. It is proposed to rebuild.

The Hazle Brook Coal Co., Pottsville, Pa., is disposing of a note issue of $2,000,000, a portion of the proceeds to be used for extensions and improvements in mining properties, including additional equipment and the completion of a new coal breaker on which work has been started. Otis Mouser is vice-president.

The International Harvester Co., 608 South Michigan Avenue, Chicago, is said to be arranging for the purchase of property at Harrisburg, Pa., as site for a new factory branch and distributing plant, to cost $250,000 with equipment. J. Newton Cecil is branch manager at Harrisburg.

The Wark Co., 1600 Walnut Street, Philadelphia, contractor, has secured an award for an eight-story automobile service, repair and garage building at Ridge Avenue and Melon Street, to cost about $400,000 with equipment.

The West Pittston School District, West Pittston, Pa., is considering the installation of manual training equipment in its proposed two-story high school addition, estimated to cost $250,000, for which bids are being received on a general contract. Thomas Foster, Coal Exchange Building, Wilkes-Barre, Pa., is associate architect.

The warehouse of the Penn-Jersey Steel Co., Camden, N. J., mentioned in our issue of Feb. 18 as costing $30,000, will, when completed, cost approximately $70,000. It is planned to carry a select stock of iron and steel bars, bands, plates, sheets, boiler tubes, etc.

Lewis Campbell, Jr., Boyertown, Pa., has leased part of the plant of the Standard Foundry & Machine Co., and will operate a nickel plating business.

Joseph Hyman & Sons, Richmond Street and Erie Avenue, Philadelphia, mentioned in the issue of Feb. 18 as having let contract for the construction of a one-story machine shop, will use this plant as a warehouse for carrying stock and rebuilding power presses. The cost of the building is given as $130,000.

The Stoker Co. of America, 859 Church Lane, Philadelphia, is manufacturing an automatic domestic coal stoker and has organized a subsidiary company to be known as the Stoker Corporation, with capital stock of $525,000, which will distribute this device. Plans for the manufacture do not involve any additional plant construction as most of the parts and materials are made by the Stoker Co. of America or are furnished on contracts already awarded.

South Atlantic States

BALTIMORE, March 1.

F. N. INGLEHART & CO., 11 East Lexington Street, Baltimore, are contemplating the erection of a six-story automobile service, repair and garage building, 100 x 100 ft., estimated to cost $300,000 with equipment.

The Standard Soapstone Corporation, Arrington, Va., is inquiring for four used Sullivan or Ingersoll vertical channelers, three undercutters, and one Sullivan, class M core drill.

The Savannah & Statesboro Railway Co., Statesboro, Ga., is completing plans for rebuilding the portion of its shops recently destroyed by fire. The work will include a new one-story structure, 70 x 90 ft. J. R. Anderson is president.

The Utility Mgf. Co., 1824 Lancaster Street, Baltimore, manufacturer of wire products, is planning the construction of a two-story addition, to cost $35,000 with equipment. The capacity will be increased from 15 to 20 per cent.

The district engineer, United States Army, Washington, has been authorized to issue an early call for bids for two hand-power traveling cranes for the District of Columbia water supply system.

The Collins Granite Co., R. F. D. No. 4, Danville, Va., has inquiries out for a heavy duty, screw-cutting engine lathe, about 30-in. swing, 12-ft. bed or longer; also for a power metal-cutting saw for handling material up to 6-in. square, and for one drill press.

The Snow Co., Siloam, N. C., recently organized by A. C. Snow, Siloam, and associates, has plans for the establishment of a factory for the manufacture of tool handles, plow handles and kindred products. H. W. Hardy will be an official of the company.

The Board of Education, Norfolk, Va., is considering the installation of manual training equipment in the proposed addition to the Maury high school, estimated to cost $230,000. Neff & Thompson, Seaboard Bank Building, are architects.

The Williamson Stump Puller Co., Cordele, Ga., has been making inquiries for a lathe, about 30-in. swing, 12-ft. bed.

The Victor Metal Weatherstrip Co., Baltimore, has leased a building at 3601 Elm Avenue, totaling about 20,000 sq. ft. of floor space, and will equip for a new plant. The company is making inquiries for equipment, including machinery for wire screen production.

The Roseboro Mills, Inc., Roseboro, N. C., is planning the installation of a steam-operated electric power plant in connection with a proposed local cotton yarn mill. The entire project will cost about $100,000. G. A. Otter is secretary, and A. I. McDonald, superintendent.

The Hackley Morrison Co., 1708 Lewis Street, Richmond, Va., machinery dealer, has inquiries out for a steel guy derrick, about 10 tons capacity, 100-ft. boom; a two-bag type concrete mixer, gasoline-operated, and one 50-hp., horizontal return tubular boiler.

The Kester Machinery Co., Cole Street, Winston-Salem, N. C., has plans for a one-story pipe works, 50 x 100 ft., and will install equipment for cutting, bending, threading, etc., for pipe sections up to 12-in. diameter. A one-story storage and distributing plant will also be erected.

Fire, Feb. 17, destroyed a portion of the Liberty Chair Co., Liberty, N. C., with loss reported at $100,000, including machinery. Plans for rebuilding are under consideration. A portion of the plant of the Staley Lumber Co., on adjoining site, was also destroyed, with loss of about $40,000.

The Carolina Veneer Co., Orangeburg, S. C., has inquiries out for a 150-hp., horizontal return tubular boiler, with auxiliary equipment. L. R. Smith is general manager.

The Columbus Electric & Power Co., Columbus, Ga., has plans for the installation of additional equipment at its recently completed power plant at Bartletts Ferry. It is proposed to install two 20,000-hp. generating units, with auxiliary machinery, increasing the output from 40,000 to 80,000 hp. R. M. Harding is general manager.

Lewter F. Hobbs, Inc., Norfolk, Va., machinery dealer, has inquiries out for a swing bench saw for cabinet work.

The Virginia Electric & Power Co., Richmond, Va., is said to be arranging an extension and betterment program to cost about $1,500,000, including additional power facilities, transmission lines, substations, etc. J. Frank McLaughlin is vice-president.

The City Council, Waycross, Ga., has authorized plans for the electrification of the municipal waterworks, including the installation of additional equipment.

F. A. Burton, Clarksville, Va., and associates have plans under way for the establishment of a factory for the manufacture of tool and implement handles, and other turned wood products.

The Central Glass Co. of Virginia, Inc., Bristol, plans

the installation of automatic polishing machinery and other equipment in connection with a plant addition. D. F. Collins is general manager.

The Fairmont Mfg. Co., Fairmont, S. C., has plans under way for a hydro-electric power house for service at its textile mill, and will begin work soon. Lockwood, Green & Co., Charlotte, N. C., are engineers.

The Myers Winch Co., Curay Building, Washington, has been incorporated under Maryland laws and will engage in the manufacture of winches for Fordson tractors. It is operating under a basic patent granted to Harry S. Myers of Van, Pa., covering the mounting of the winch on the rear end of the tractor. The new company succeeds to the business of Harry S. Myers who, for the past five years, has manufactured and sold these winches.

New England

BOSTON, March 1.

A NUMBER of companies which had been negotiating for machine tools for a month or longer closed contracts last week, making February sales in this territory larger than for any month during the past year. The purchase of both new and used equipment for a Providence plant was the outstanding transaction. Details are withheld, but it is reported that the total expenditure is comparatively large. The purchase of a small lathe, an automatic screw machine, a universal milling machine, an oil separator and minor equipment by a Boston company was the largest individual used tool business reported. Demand includes a wide variety of machinery and is better distributed throughout New England than in many weeks. Recent sales include a new multiple-spindle drill to a Massachusetts shop, a new small lathe and a profiler to a Rhode Island plant, and three used sensitive drills to a Vermont company. New inquiries are in good volume, and there is still a large amount of machinery under negotiation on old inquiries. Much interest is evinced in the sale of several hundred surplus tools at the plant of the Taft-Peirce Mfg. Co., Woonsocket, R. I., on March 9 and 10.

Business in small tools and repair parts is more active and deliveries are growing more extended on certain class of small tools each week.

Because of the heavy snows, there was a big sale of tractors throughout New England during February. One local manufacturer, having a sizable accumulation of stock, is sold out.

Richard B. Aldorofft, assistant trust officer Manufacturers' Trust Co., New York, last week purchased at public auction for $250,000 the land and plants of the Stevens-Duryea Co., Inc., Chicopee, Mass., maker of automobiles. The sale was to satisfy a mortgage held by the Gotham National Bank of New York, recently acquired by the Manufacturers' Trust Co. No statement is forthcoming as to what the purchaser proposes to do with the plant.

The Akin-Dennison Co., 231 Union Street, New Bedford, Mass., contemplate the erection of a coal pocket this spring.

The Boston & Maine Railroad, North Station, Boston, has started work on a coke reclamation plant at its East Somerville yards. Plans are private.

The American Fibre Co., Coleman Street, Gardner, Mass., will erect an addition to cost $40,000. Herbert A. Foster, 15 Oliver Street, Fitchburg, Mass., is the architect.

Bids will be refigured for the proposed plant of the *Waterbury Republican and American*, 174 Grand Street, Waterbury, Conn., for which motors and miscellaneous equipment are wanted. Lockwood Greene & Co., 100 East Forty-second Street, New York, are the engineers.

The Peck-Harris Mfg. Co., Plainville, Conn., has been incorporated with capital stock of $50,000 and will manufacture metal stampings, flat springs, wire forms and specialties. It has leased a shop in Plainville which has been equipped with high-speed presses. D. C. Peck, president Peck Spring Co., is also president of the Peck-Harris Mfg. Co., and the new company will take over certain classes of work which the Peck Spring Co. has not been equipped to handle. The Peck-Harris Mfg. Co. is in the market for flat wire, brass and alloys.

The Holyoke Co., 621 Broadway, New York, mentioned on page 463 of the Feb. 11 issue of THE IRON AGE, calls attention to the fact that the postoffice address of its plant is Holyoke, Mass., and not Springdale, Mass. Springdale is a suburb of Holyoke.

The Peck, Stow & Wilcox Co., Southington, Conn., manufacturer of hardware specialties, tools, etc., has awarded a general contract to the H. Wales Lines Co., Meriden, Conn., for a two-story addition, 98 x 105 ft.

The Central Connecticut Power & Light Co., East Hampton, Conn., is disposing of a preferred stock issue to total $354,200, a portion of the proceeds to be used for extensions and improvements.

Gerstein Brothers & Cooper, 1-3 West Third Street, Boston, manufacturers of range boilers, heating apparatus, etc., will erect a one-story addition to cost about $18,000.

The Manchester Traction, Light & Power Co., Manchester, N. H., and affiliated interests, recently acquired by the Middle West Utilities Co., 72 West Adams Street, Chicago, have plans for a super-power project in the southeastern and southwestern portions of the State, including increased power developments, steel tower transmission lines, etc. Other companies included in the project are the Twin State Gas & Electric Co., Dover, N. H., and the Keene Gas & Electric Co., Keene, N. H. The expansion is reported to cost in excess of $2,500,000.

The New England Power Co., Worcester, Mass., has work under way on a new hydroelectric power plant on the Deerfield River, near the Vermont-Massachusetts State line, and is planning for a similar station at Bellows Falls, Vt., as soon as this is completed. The expansion will cost in excess of $1,500,000. The construction of a new transmission line from Millbury to Medway, Mass., will soon begin.

Superstructure work is under way for the main two-story building, 80 x 330 ft., for the new trade and vocational school for the Board of Education, Bridgeport, Conn., as well as for the foundry on adjoining site. E. B. Caldwell, Jr., Bridgeport, is architect.

Detroit

DETROIT, March 1.

CONTRACT has been awarded by the Battle Creek Bread Wrapping Machine Co., Battle Creek, Mich., to the H. V. Snyder Co. for three new one-story units, estimated to cost $110,000 with machinery.

The Shaw-Walker Co., Muskegon, Mich., manufacturer of metal and wood filing cabinets and equipment, bookcases, etc., has engaged Albert Kahn, Inc., Marquette Building, Detroit, to prepare plans for a five-story and basement addition, 80 x 200 ft., estimated to cost $250,000 with machinery. L. B. Walker is secretary and treasurer.

The Kalamazoo Paper Box Co., North Pitcher Street, Kalamazoo, Mich., will soon ask bids on general contract for a three-story addition, estimated to cost $215,000, with machinery. Billingham & Cobb, Press Building, are architects. R. E. Staebler is general manager.

The Watervliet Paper Co., Watervliet, Mich., is completing plans for its proposed expansion and improvement program, estimated to cost $750,000, with machinery, and expects to begin work early in April.

The Berkey & Gay Furniture Co., Grand Rapids, Mich., has plans for a six-story addition, totaling about 275,000 sq. ft. of floor space, estimated to cost about $350,000. The company has taken over the former plant of the Cheney Talking Machine Co., and will use for expansion.

The Detroit Die & Tool Co., 248 West Congress Street, Detroit, has asked bids on general contract for a new one-story plant on Georgia Avenue, Highland Park, 120 x 120 ft., reported to cost about $30,000. R. Arthur Bailey, 92 Peterboro Street, is architect. C. D. Buell is president.

The Interlocking Cement Stone Silo Co., Imlay City, Mich., has tentative plans for the rebuilding the portion of its plant recently destroyed by fire, with loss reported in excess of $50,000 with equipment.

The Ford Motor Co., Detroit, plans the construction of a hydroelectric power plant in Washtenaw County, near Ypsilanti, Mich., with initial capacity of 45,000 hp., estimated to cost $1,000,000 with transmission system. The station will be used in connection with a new textile mill to be erected by the company in this district, the latter project to cost close to $2,500,000.

The Kalamazoo Stove Co., Kalamazoo, Mich., will proceed with the erection of an addition, totaling about 22,000 sq. ft. of floor space, for which a general contract has been let to the H. D. Boyer Co., Chicago. It is estimated to cost $45,000 with equipment.

The Board of Education, Berkley, Mich., is considering the installation of manual training equipment in its proposed three-story high school, estimated to cost $160,000, for which bids have been asked on general contract. Lane, Davenport & Peterson, Charlevoix Building, Detroit, are architects.

The Chevrolet Motor Co., Flint, Mich., has awarded a general contract to Davis & McGonigle, Buhl Building,

Detroit, for a three-story factory branch for service and repair work on Amsterdam Avenue, Detroit, 150 x 160 ft., to cost about $125,000 with equipment. Albert Kahn, Inc., Marquette Building, Detroit, is architect.

The Bryant Paper Co., Kalamazoo, Mich., has preliminary plans under way for a new mill unit, to cost $500,000 with machinery. The company will also make other improvements, using in all a fund of about $1,000,000, including a machine shop and new power house recently completed. Felix Pagensteacher is president.

The Abram Cement Tool Co., 3818 Grand River Avenue, Detroit, has recently been incorporated with capital stock of $50,000 and has engaged in the manufacture of a complete line of cement finishing tools designed by J. D. Abram.

The Wolverine Name Plate Co., 1310 Maple Street, Detroit, has recently been incorporated and has engaged in the manufacture of name plates of all types. The company is in the market for sheet aluminum, copper and brass.

Buffalo

BUFFALO, March 1.

A PREFERRED stock issue of $6,919,000, is being sold by the Empire Power Corporation, Lockport, N. Y., a considerable portion of the proceeds to be used for the acquisition of additional properties, and extensions and improvements in present light and power properties. E. L. Phillips is president.

The Wickwire Spencer Steel Corporation, River Road, Buffalo, has plans for three new one-story units, comprising crushing plant, 50 x 100 ft., soaking pits, 40 x 60 ft., and general storage and operating building, 100 x 300 ft., to cost about $375,000 with equipment.

Eli Goldstein, 717 Mutual Life Building, Buffalo, architect, will soon ask bids on general contract for a three-story automobile service, repair and garage building, 40 x 100 ft., to cost $65,000 with equipment.

The Raquette River Paper Co., Potsdam, N. Y., is considering plans for rebuilding the portion of its mill at Hewitsville, near Potsdam, destroyed by fire Feb. 17, with loss estimated at $80,000 including equipment. The electric power department was damaged.

The Niagara Body Co., 61 Peckham Street, Buffalo, manufacturer of automobile bodies, has taken out a permit to build a new one-story plant to cost about $32,000.

The Rochester Gas & Electric Corporation, 34 North Clinton Street, Rochester, is said to be planning to ask bids soon for the construction of its proposed hydroelectric power plant and dam on the Genesee River, near Canadea, N. Y., to cost $2,000,000 with transmission system, substations, etc. The company also has plans for a similar power project at Mount Morris, N. Y., to cost more than $5,000,000.

The Mathieson Alkali Works, Inc., Niagara Falls, N. Y., with headquarters at 250 Park Avenue, New York, has arranged a fund of $500,000 for the replacement of obsolete equipment at its different plants, including branch works at Newark, N. J., and Saltville, Va.

R. O. Derrick, 120 Madison Avenue, Detroit, architect, and Gordon & Kaelber, Silbey Block, Rochester, associate architects, have plans under way for a six-story automobile service, repair and garage building at Stone and Eli Streets, Rochester, to cost about $300,000 with equipment.

The Niagara Fruit Vending Corporation, Lockport, N. Y., has been organized to manufacture a machine for vending apples and oranges. The machines at present are being made on contract and no plans have been made for a factory building.

The Art Metal Construction Co., manufacturer of metal office furniture, bank, vault and other steel equipment, Jones and Gifford Avenue, Jamestown, N. Y., has filed plans for a three story brick addition to its plant No. 4, to cost $35,000 exclusive of equipment.

Pittsburgh

PITTSBURGH, March 1.

THE last week of February was marked by an improved inquiry for machine tools, but sales during the month were in very moderate volume. General business has been somewhat under the expectations of the latter part of last year in the steel and allied industries, and a dropping off in machine tool orders probably finds its principal explanation in the caution growing out of that fact. The Etna Foundry & Machine Co., Warren, Ohio, was a recent buyer of a good-sized radial drill.

A fire, Feb. 26, at the plant of the McKeesport Tin Plate Co., Port Vue, near McKeesport, Pa., did considerable damage in the grease and carpentry shops and box factories, but did not reach the rolling mill buildings, and operations are being maintained with all of its 44 mills under power.

Work will begin on a one-story addition to the plant of the Universal Steel Co., Bridgeville, Pa., 100 x 150 ft., to cost about $45,000.

Lawrence R. McAfoos and Max Pincus, Pittsburgh, have plans for a one-story addition to their iron and steel works at 3005 Cohutta Street.

The Enterprise Bronze Co., Pittsburgh, has applied for permission to equip and occupy the building at 515-17 Reedsdale Street, for a new foundry for the production of bronze, aluminum and other metal castings.

The Hygeia Mfg. Co., Farmington, W. Va., manufacturer of ice-making machinery, etc., will rebuild the portion of its plant recently destroyed by fire, with loss reported at $35,000 including equipment. A. V. Lynch is head.

The Apollo Steel Co., Apollo, Pa., is said to be arranging for the early electrification of a portion of its works and will install considerable electric power equipment.

The Appalachian Power & Light Co., Bluefield, W. Va., has plans for extensions in its steam-operated electric power plant at Cabin Creek, W. Va.

The Sheffield Glass Bottle Co., Sheffield, Pa., is arranging to rebuild the portion of its plant recently destroyed by fire, to cost in excess of $150,000 with equipment.

The Board of Education, Avalon, Pa., plans the installation of manual training equipment in a proposed two-story and basement high school, to cost $185,000, for which foundations will soon be laid. J. H. Phillips, Pittsburgh, is architect.

Chicago

CHICAGO, March 1.

THE outstanding feature of the week was the placing of the entire machine tool list of the Chicago & North Western Railway. Lists which are still active include those of the Santa Fe, the Rock Island, the Illinois Central and the Florida East Coast. The Santa Fe has put out additional inquiries for a Ryerson, or equivalent, motor-driven steel-frame punch and shear for ⅝-in. plate and a belt-driven American, or equivalent, 18-in. x 10-ft. heavy duty engine lathe; also for a No. 304-A Oster, or equal, 1½ to 4-in. motor-driven pipe machine, and a No. 304 Oster, or equal, 1½ to 2-in. motor-driven pipe machine.

As a whole, Chicago dealers find that February was equal to, or slightly better, in volume of sales, than the preceding month. It also showed a gain over February, 1925. The outlook for March appears to be favorable, since a substantial volume of inquiry is before the trade. Dealers in heavy machine tools are more optimistic because of the interest now being shown in this line of equipment. No changes in prices are reported, and deliveries are said to be easier except on planers and milling machines.

The Western Electric Co., Chicago, has bought two drill presses, a 5-ft. radial drill and a 30-in. lathe, and is said to be inquiring for a shaper, a large lathe, a number of small lathes and special grinding equipment. The Century Electric Co., St. Louis, has bought eight lathes and several shapers, and the Chicago Electric Co. has purchased two lathes and a shaper. The Bucyrus Co., South Milwaukee, Wis., has placed a large boring mill with William Sellers & Co., Inc., and the Continental Can Co., Chicago, has closed for its list. The Nash Motors Co. has purchased a number of production and standard tools for its plants at Kenosha, Racine and Milwaukee. The International Harvester Co., Chicago, is asking for preliminary figures for estimating purposes. The National Malleable & Steel Castings Co., Chicago, will soon enter the market for a number of machine tools.

The Stafford Sales Co., 6301 South Park Avenue, Chicago, manufacturer of automobile bumpers, has acquired 59,000 sq. ft. on Fifty-ninth Avenue, Cicero, Ill., and contemplates the erection of a manufacturing plant.

The Universal Stamping & Mfg. Co., 1925 South Western Avenue, Chicago, will build a one story brick factory, 108 x 175 ft., to cost $58,000. A. E. Strobel, 110 South Dearborn Street, is architect.

Waukegan Foundry Co., Terminal Building, Waukegan, Ill., is asking bids on a new one and two-story foundry, 90 x 250-ft., to cost $50,000. Josiah L. Rice, 4213 North Ashland Avenue, Chicago, is architect.

The Norton Lasier Co., Rockwell Street, Chicago, manufacturer of hardware specialties, will erect a new factory to cost $60,000.

The Peoria Malleable Castings Co., Peoria, Ill., was damaged by fire, Feb. 17, to the extent of $25,000. According to L. E. Robey, president, loss to the building will amount to about $15,000 and to material and equipment about $10,000.

T. A. Cummings, Jr., has purchased the plant of the Nelson Foundry Co., 4533 Patterson Avenue, Chicago, and will operate it, as a gray iron jobbing foundry, under the name of the Cummings Castings Co.

The Maytag Co., Newton, Iowa, will build a gray iron foundry, 135 x 196 ft., to cost $400,000. The Lanning Construction Co., Oskaloosa, Iowa, is general contractor.

The Illinois Glass Co., Alton, Ill., has plans nearing completion for the construction of an addition to its Gas City, Ind., boiler plant. The cost of this improvement is said to be $175,000 with equipment. Jackson & Moreland, 31 St. James Avenue, Boston, are architects and engineers.

The United Light & Power Co., Mason City, Iowa, is arranging for an addition to its steam operated electric power plant, estimated to cost $1,000,000. An order for a 7500-kw. generator has been placed with the General Electric Co. and contracts for other apparatus will be let in the near future.

The Strong-Scott Mfg. Co., manufacturer of flour mill machinery, 413 South Third Street, Minneapolis, Minn., will build a reinforced concrete factory with 60,000 sq. ft. of floor space to cost $200,000. A. W. Strong is president.

The Kausel Foundry Co., Minneapolis, Minn., John Kausel, president, will begin work this month on a foundry consisting of four one-story buildings to cost $20,000.

The Crystal Copper Co., Butte, Mont., Peter A. Brady, general superintendent, will purchase mine equipment and machinery to replace that recently destroyed by fire.

Contract has been let by the Cleveland, Cincinnati, Chicago & St. Louis Railroad Co., Big Four Building, Cincinnati, to A. J. Glaser, Muncie, Ind., for an addition to its engine terminal and shops at Kankakee, Ill., to cost about $150,000.

The Illinois Power & Light Corporation, Chicago, is disposing of a preferred stock issue of $2,000,000, a portion of the proceeds to be used for expansion. The company also operates the Des Moines Electric Co., Des Moines, Iowa, and the Kansas Public Service Co., Kansas City.

The Commercial Auto Body Builders, Inc., 3245 Archer Street, Chicago, will ask bids soon for a one-story plant, 135 x 150 ft., to cost $100,000 with machinery. Sailor & Hoffman, 718 West Sixty-third Street, are architects.

The Holly Sugar Co., Colorado Springs, Colo., is beginning foundations for the initial units of its proposed new mill at Torrington, Wyo., and will proceed with superstructure at an early date. It is reported to cost in excess of $500,000. A power house will be built.

The Board of Education, Normal, Ill., is considering the installation of manual training equipment in its proposed two story and basement high school to cost $200,000, for which bids will soon be asked on general contract. A. L. Pillsbury, People's Bank Building, Bloomington, Ill., is architect.

The Morton Mfg. Co., 5133-43 West Lake Street, Chicago, manufacturer of railroad equipment and supplies, has awarded a general contract to E. L. Ward, 4733 Congress Street, for its proposed two-story plant, 50 x 105 ft., to cost approximately $100,000 with equipment. H. Morton is president.

Fire, Feb. 13, destroyed a portion of the plant of the Iowa Steel & Iron Works, Cedar Rapids, Iowa, with loss reported at $12,000.

The United Light & Power Co., Mason City, Iowa, has plans for extensions in its steam-operated electric power house to double the present capacity, reported to cost about $200,000.

Milwaukee

MILWAUKEE, March 1.

FEBRUARY bookings of machine tools by local builders reached a relatively satisfactory volume, being in excess of January business and closely approximating December orders. Prospects for March are considered promising, with several large automotive plants entering the market with sizable requirements for production floor equipment. Makers of milling machines describe the situation as healthy, with new business developing at a satisfactory rate.

The Board of Education, Marshfield, Wis., probably will accept the low bid of Theodore Molzahn, Majestic Building, La Crosse, Wis., at $189,290 for the general contract on an addition to the Purdy vocational and junior high school. The estimated cost of the complete work is $325,000. The architects are Parkinson & Dockendorff, La Crosse. Marcus Hansen is secretary of the board.

The Rim-Cut Can Opener Mfg. Co., Menomonee Falls, Wis., has been incorporated with $50,000 capital stock to manufacture hardware specialties, manual tools, and mechanical devices and appliances. An existing plant has been leased and will be reequipped for production. The principals are J. E. Cummings, J. L. Austin and L. E. Peterson.

The Meyer Ice Co., 885 Thirtieth Street, Milwaukee, which is erecting an addition to its artificial ice plant and warehouse, 50 x 150 ft., has placed the order for the refrigerating machinery, complete, to the Vilter Mfg. Co., local.

The Electro Flushing & Mfg. Co., Milwaukee, has been incorporated with $40,000 capital stock to manufacture plumbers' specialties, equipment, fixtures and devices, principally a motor-operated machine for flushing sewers, waste and drain pipes. Arrangements for production are being completed. The incorporators are Henry W. Tews, 1101 Sherman Boulevard; Ernst Jahn, and Alfred J. Willis.

The Art Craft Iron Shop, Milwaukee, organized by Fred W. Velguth, has established a shop at 420 Fourth Street for the manufacture of art metal products, wrought iron materials and merchandise, fences, railings, gates, balustrades and similar goods. Equipment requirements for the present have been satisfied but enlargement of the facilities is in prospect.

The Hamilton Mfg. Co., Two Rivers, Wis., manufacturer of steel and wood printing house and dental furniture, fixtures, machinery, etc., is planning enlargement of its works. Articles have been filed fixing the authorized capitalization at $1,000,000 preferred stock and 15,000 shares of common stock without par value, to accommodate the growth of the business and prospective enlargement. George S. Hamilton is president and general manager.

Hugo P. Miller, architect, 779 Third Street, Milwaukee, will close bids March 15 for the construction of a three-story scrap reclamation plant, 50 x 60 ft., at Park Street and Muskego Avenue. The owner's name is withheld for the present. The structure will be equipped with electric elevator, steel rolling doors and complete mechanical equipment.

Ohio

CINCINNATI, March 1.

A SUDDEN wave of machine tool buying has developed and sales have exceeded those of any previous week this year. Purchases in the past ten days have been sufficiently heavy to offset the light volume of business early in February and to put the month ahead of January in total bookings.

The diversified sources of business is an outstanding feature. One large builder states that orders in February came from a greater number of industries than at any time since 1920. Railroads continue among the foremost factors in the market. The Central of Georgia has closed on its list of tools, placing orders for radial drills, portable lathes and a boring mill with local companies. The New York Central and the Illinois Central are expected to buy within a week or two, while it is understood that the Santa Fe will purchase three frog and switch planers in the next ten days. Automobile makers have purchased a number of automatic lathes, although buying in the Detroit district as a whole is on a comparatively small scale.

In Cleveland, machine tool business has been rather slow the past week. Most dealers state that February sales were about the same as those in January. A local manufacturer of turret lathes reports a considerable gain in orders the past month over the previous month, being widely distributed and mostly for single machines. Dealers are working on a fair volume of small inquiries and are developing some business by showing manufacturers how to reduce production costs by replacing old tools with up-to-date equipment. The Wheeling & Lake Erie Railroad, through its purchasing department in Cleveland has issued an inquiry for two 20-in. x 8-ft. heavy-duty engine lathes and two 28-in. back geared shapers, all motor driven. Used machines are wanted.

The Cleveland Planer Co., Cleveland, during the week took an order from Providence, R. I., for a 30 x 30 in. x 12-ft. planer. The Lycoming Mfg. Co., Williamsport, Pa., has contracted for 13 upright drills and five sensitive radial drills, the business being divided between two local builders. The Boye & Emmes Machine Tool Co., Cincinnati, which is rebuilding its recently destroyed plant, has closed for a planer, cutter grinder, vertical drill and milling machine and will buy additional machinery entailing a total expenditure of approximately $75,000. A Western railroad bought six Ransom motor-driven grinders. The Ramapo Ajax Corporation, Hillburn, N. Y., is reported to be in the market for three frog and switch planers. An inquiry from Canada calls for five 30-in. and two 32-in. lathes.

A local turret lathe manufacturer has sold four machines in the oil fields, four to a Cincinnati company and three in Chicago territory. The Ohio Electric Co., Youngstown, bought a Ransom grinder, a 20-in. Aurora motor-driven drill and a 16-in. Worcester shaper. The Industrial Works, Bay City, Mich., purchased a 36-in. x 16-ft. Pond motor-driven lathe. The International Portland Cement Corporation, New York, took two 36-in. x 20-ft. lathes for its New Orleans plant. The Tennessee Copper Co., New York, bought a McCabe double spindle lathe, while the United Fruit Co. bought a 24-in. x 10-ft. lathe for export to South America. A local lathe builder booked single machines for delivery to New Orleans, Chicago, Buffalo and Cleveland. A St. Louis manufacturer has put out an inquiry for a small gap lathe and an engine lathe. The Cincinnati Planer Co. sold a 78-in. x 22-ft. planer in New England. The John Steptoe Co. booked a 20-in. shaper for shipment to Kansas City, Mo.

The Niles-Bement-Pond Co. has disposed of a considerable portion of the machinery from its dismantled plant at Plainfield, N. J. The Foundry Service Corporation, Freeport, L. I., bought 22 of the used tools, consisting of lathes, planers, drills, milling machines and grinders. Other sales of used machinery include a 30-in. Pond planer to the Charles K. Schweizer Co., St. Louis, a 72-in. rack cutter to a Cleveland company, a 30-in. Pond motor-driven lathe to Moore Brothers, Elizabeth, N. J., two 30-in. Pond planers to the E. W. Bliss Co., Brooklyn, a 48-in. Bement horizontal miller to the Sheridan Iron Works, Champlain, N. Y., and a 6-ft. Niles radial drill, a 30-in. Pond planer, a Ransom motor-driven grinder and a 60-in. duplex control horizontal borer to an Eastern company.

The Cincinnati Mfg. Co., Evans and Gest Streets, Cincinnati, has awarded a general contract to the H. C. Hazen Contracting Co., local, for a six-story addition, 72 x 103-ft., for its bronze, metal and screen departments.

The Ohio Bell Telephone Co., Cleveland, will spend $19,000,000 for additions and improvements and the purchase of equipment in 1926.

The Louisville Taxicab & Transfer Co., Ninth and Liberty Streets, Louisville, Ky., is said to have plans for a new three-story building, 105 x 200-ft., to cost $100,000.

Contract has been let by the Witt Cornice Co., 2124 Winchell Avenue, Cincinnati, manufacturer of metal cornices, roofing specialties, etc., to the Austin Co. for a new one-story plant to cost about $100,000 with equipment. J. W. Witt is president.

The East Side Pattern Works, Inc., Cincinnati, manufacturer of metal and wood patterns, has filed plans for a one-story factory at 4423 Verne Avenue, to cost $18,000 with equipment. Erwin C. Hoinke, Cincinnati, is architect.

The Tennessee Electric Power Co., Chattanooga, Tenn., has preliminary plans for rebuilding its electric power house at Erin, Tenn., recently acquired, to include the installation of additional machinery.

The Louisville Petroleum Refining Co., Louisville, has begun work on extensions in its plant on West Broadway. The expansion will include a new skimming plant to cost approximately $50,000 with machinery. W. M. Mitchell is president.

The Kentucky Electric Power Corporation, Nortonville, Ky., has plans for a new steam-operated electric generating station, with initial capacity of 5000 kw. The station will be equipped to use pulverized fuel. The J. G. White Engineering Corporation, 43 Exchange Place, New York, is engineer and will be in charge of erection.

The France Foundry & Machine Co., North Baltimore, Ohio, is planning the construction of a number of buildings, including a one-story foundry. John W. Hawk is superintendent.

The Kentucky & West Virginia Power Co., Hazard, Ky., is said to have preliminary plans for a new steam-operated electric power house at Lothair, Ky., to cost in excess of $100,000 with machinery. Transmission lines will also be extended.

The Saniwax Paper Co., Kalamazoo, Mich., has work under way on a new branch plant at Memphis, Tenn., to cost about $65,000 with equipment. Charles W. Clements is local manager.

The Watauga Power Co., Bristol, Tenn., operated by Henry L. Doherty & Co., 60 Wall Street, New York, plans the installation of two new water turbines and auxiliary equipment at its power plant near Bristol.

The Southern Cities Power Co., Chattanooga, Tenn., is arranging for a new ice-manufacturing plant at Pikeville, Tenn., occupying a building now being erected by local interests.

Gulf States

BIRMINGHAM, March 1.

PLANS are being considered by the Continental Oil Co., Denver, Colo., for extensions and betterments in its Texhoma refining plant at Wichita Falls, Tex., to include the installation of additional machinery. A lubricating oil plant will be installed. The entire project is reported to cost $250,000.

The Texas Public Utilities Co., San Marcos, Tex., is arranging to rebuild the portion of its ice manufacturing plant recently destroyed by fire. It will be equipped for an output of 45 tons per day and cost $55,000.

Fire, Feb. 17, destroyed a portion of the mill of the Houston Sash & Door Co., McKee Street, Houston, Tex., with loss reported at $100,000, including equipment. Plans for rebuilding are being considered.

The Marble Falls Water & Light Co., Marble Falls, Tex., is considering the installation of additional machinery at its electric light and power station, and waterworks. H. L. Jones is head.

The Board of Education, Winters, Tex., is considering the installation of manual training equipment in its proposed new high school, for which bonds for $110,000 have been approved. It is expected to begin work soon.

The Equitable Equipment Co., Whitney Building, New Orleans, has taken title to a 10-acre tract near the New Orleans terminal and will establish new locomotive repair shops, machine shops, power house and other structures. The new plant will cost close to $175,000 with equipment. Neville Levy is vice-president.

The Louisiana Oil Refining Corporation, Shreveport, La., is disposing of a preferred stock issue of $4,000,000, a portion of the proceeds to be used for expansion in refineries, pipe lines and other property. Richard B. Kahle is president.

The Standard Mfg. & Engineering Corporation, Duval Building, Jacksonville, Fla., has inquiries out for sawmill equipment, contractors' machinery and supplies, and a quantity of reinforcing steel.

In connection with the establishment of a new freight and classification yard at Miller's Switch, about 6 miles from Dallas, Tex., the Southern Pacific Railroad Co., Dallas, plans the construction of an engine house, with shop for locomotive repair work. The entire project is reported to cost $850,000. W. L. Cox is Dallas terminal superintendent.

The Board of Public Utilities, Jacksonville, Fla., has plans under consideration for extensions and improvements in the municipal electric light and power plant to cost close to $1,500,000 with machinery. Frank H. Owen is chairman of the board.

The Pinellas County Power Co., St. Petersburg, Fla., has acquired about 35 acres near Inglis, Fla., as a site for a proposed steam-operated electric power plant with initial capacity of 60,000 kw. The company will expend close to $5,000,000 for extensions and betterments, including new power station, automatic power substations and transmission lines. Byrd Latham is president.

The Port Gibson Veneer Co., Port Gibson, Miss., H. J. Wilson, president, has plans for a one-story mill, 150 x 240 ft., for which superstructure will soon begin. A list of equipment to be installed, including veneer lathes, clippers, etc., has been arranged. Alexander Wilson, Hazlehurst, Miss., is construction engineer.

The Dixie Ice Co., Dallas, Tex., will soon begin the construction of a new plant, 60 x 155 ft., at Victoria Street and Hoefgen Avenue, San Antonio, Tex., for an initial output of 50 tons per day.

The Chalmette Petroleum Corporation, New Orleans, contemplates rebuilding the portion of its storage and distributing plant at City Park Avenue and St. Louis Street, destroyed by fire Feb. 15, with loss estimated at $55,000, including equipment.

The Kansas City Southern Railway Co., Kansas City, Mo., is said to have preliminary plans for a new pumping plant in the vicinity of Shreveport, La., to cost $30,000 with equipment. A. N. Reece is chief engineer.

H. E. Hobson, Quinlan, Tex., and associates are planning for the installation of a steam-operated electric power

house for local commercial service to cost $25,000. A transmission line will be built.

George H. Gafney, Lake City, Fla., is at the head of a project to establish a local brick-manufacturing plant, with initial output of 25,000 brick per day. The cost is estimated at $80,000 including machinery.

The Texas Central Power Co., San Antonio, Tex., has preliminary plans under way for a new steam-operated electric power house at Crystal City, Tex., reported to cost $30,000. Extensions will be made in transmission lines.

The Waggoner Refining Co., Electra, Tex., has tentative plans for extensions in its oil refinery to cost close to $300,000 with additional machinery. A gasoline plant will also be installed. Charles Kolp is manager.

Indiana

INDIANAPOLIS, March 1.

CONTRACT has been let by Haess Brothers, Hammond, Ind., to the Austin Co., for a one-story machine shop, 85 x 150 ft., to cost $45,000 with equipment.

Officials of the Henry Weis Mfg. Co., Atchison, Kan., manufacturer of sheet metal products, metal appliances, etc., have formed a new company under the same name in Indiana, with capital of $125,000, to provide for the construction and operation of its proposed new plant at Elkhart, Ind., where headquarters will be established. A general contract for the works has been let to Ralph Sollitt & Sons, 518 East Sample Street, South Bend, Ind., consisting of a main one-story plant, 220 x 230 ft., and one-story power house, estimated to cost $90,000 with equipment. Hubert Miller, Menger Building, Elkhart, is architect. Officials of the new company are Henry and William M. Weis.

The Standard Brick Co., Evansville, Ind., is considering the rebuilding of the portion of its No. 4 plant destroyed by fire Feb. 19, with loss estimated at $65,000 including equipment.

The Vonnegut Hardware Co., 120 East Washington Street, Indianapolis, is arranging for early award of general contract to the Service Construction Co., Castle Hall Building, low bidder at $207,852, for the erection of a proposed six-story and basement storage and distributing plant, 100 x 195 ft. The structure will cost $300,000, with material-handling and other equipment. Vonnegut, Bohn & Mueller, Indiana Trust Building, are architects.

The Velie Motors Corporation, Moline, Ill., has begun the removal of equipment at its branch plant at Marion, Ind., to the main works at Moline, where operations will be concentrated in the future. The company will develop the Moline plant to provide for the increase, and will also arrange for the production of a large number of parts heretofore purchased.

In connection with expansion plans for motor car manufacture and other machinery production, officials of the Nordyke & Marmon Co., Indianapolis, have formed two new companies, one to be known as Nordyke & Marmon, Inc., to manufacture flour mill and kindred machinery, and the Marmon Motor Car Co., to operate and develop the automobile division.

The Indianapolis Light & Heat Co., Indianapolis, will expend $1,000,000 in improvements and extensions of its service in 1926. The Mill Street and Kentucky Street power stations will be improved at a cost of approximately $500,000, while construction work at the company's storage yards at Morris Street and the Belt Railroad will cost $200,000.

St. Louis

ST. LOUIS, March 1.

ABOUT 10 acres on Bircher Street, near the Union Boulevard, St. Louis, has been acquired by the Moloney Electric Co., Seventh and Hickory Streets, manufacturer of transformers, etc., as a site for a new plant to cost more than $1,000,000 with machinery. The company was taken over recently by the American Brown-Boveri Electric Corporation, 165 Broadway, New York, and will continue as a subsidiary. T. O. Moloney is head.

The City Council, Kaw City, Okla., plans the installation of pumping equipment in connection with extensions and improvements in the municipal waterworks, for which plans are being drawn by Grant, Fulton & Letton, 525 South Thirteenth Street, Lincoln, Neb., engineers.

The Federal Paper Stock Co., 1814 North Main Street, St. Louis, has purchased a site at Gano Street and McKissock Avenue, and will have plans prepared for a new plant to cost $100,000 with machinery.

The Board of Education, University City, St. Louis, has authorized the installation of manual training equipment in a proposed addition to the high and junior high schools to cost $125,000. Trueblood & Graf, Chemical Building, are architects.

The Westinghouse Electric & Mfg. Co., East Pittsburgh, and 717 South Twelfth Street, St. Louis, has awarded a general contract to the Gamble Construction Co., 620 Chestnut Street, for a local plant for the manufacture of concrete lighting standards, to occupy a portion of the tract on Bingham Street, St. Louis, recently acquired. It will be one story, 80 x 470 ft., and cost $75,000 with equipment. Other extensions will be made later with additional plant units to cost approximately $500,000.

The City Council, Elk City, Okla., plans the installation of electrically-operated pumping machinery in connection with extensions and betterments in the municipal waterworks. A fund of $335,000, is being arranged for the project.

The Pure Oil Co., Columbus, Ohio, is reported to be planning the construction of a gasoline refinery at Cushing, Okla., to cost close to $200,000 with machinery.

The Peoples Motorbus Co., 583 Adelaide Street, St. Louis, has leased a one and two-story building to be erected at Iron Street and the line of the Missouri Pacific Railroad for a proposed service, repair and garage building. It will cost about $200,000 with equipment.

The Independent Oil & Gas Co., Kennedy Building, Tulsa, Okla., has acquired the refinery, pipe line, storage and distributing plant and other properties of the Indiahoma Refining Co., at Okmulgee, Okla. The new owner has work under way on a new lubricating oil-manufacturing plant to develop a capacity of 15,000 gal. per day, and a new gasoline refinery with capacity of 1000 bbl. daily. A portion of the equipment of the Indiahoma company will be used in the plant expansion and other machinery installed. R. M. Riggins, Tulsa, is secretary.

The Century Electric Co., St. Louis, has purchased an 8-acre factory site on a branch of the Wabash Railroad, at Spring Avenue, Forest Park Boulevard and Manchester Avenue, on which it will erect buildings for manufacturing and warehousing. The company does not contemplate abandonment of any of its other factories or warehouses.

Canada

TORONTO, March 1.

ACCORDING to local builders and dealers a good demand exists for machine tools in units of one or two. Sales are chiefly for replacement, but some purchasing is also being done for new works. The automotive industry has been buying more freely and orders are again appearing for equipment for car shops. Several inquiries are out for electrical and waterworks equipment. There is also a good call for mining machinery. Second hand machinery is in stronger demand, and small tools are also moving freely.

Bids will be received by B. Carr, secretary of the Board of Water Commissioners, Niagara Falls, Ont., until March 10, for a 5,000,000 gal. electrically driven centrifugal pump.

During the past six months the Goodyear Tire & Rubber Co. has spent $120,000 on buildings and equipment at its plant at Bowmanville, Ont., and an additional $60,000 will be spent on completing buildings now under construction.

Bids will be received by Mederic Forget, clerk, Belle River, Ont., until March 8 for the construction of a power house, pumping station, etc. Equipment will be purchased later.

The Warren Pulp Co., Riviere de Loup, Que., proposes to start work soon on an addition to its plant.

Bids will be called immediately for the factory building to be erected at Trenton, Ont., for the Hinde Dauch Paper Co. of Canada, Ltd., 43 Hanna Street, Toronto. Building and equipment will represent an expenditure of about $300,000.

The sash and door factory of Paquet & Godbout, 21 William Street, St. Hyacinthe, Que., was destroyed by fire recently with a loss of $75,000. It is expected to rebuild.

The pattern and machine shop of the Canada Wire Goods Co., Ferguson Avenue, Hamilton, Ont., was damaged by fire with a loss estimated at $10,000. A. Donald is manager.

The Dominion Tool & Forgings, Ltd., has acquired a building at Sherbrooke, Que., and proposes to remove its business from Montreal to the new premises as soon as possible. Directors of the company include W. W. Wilson, manager; A. M. Sangster, D. J. Steel, C. B. Howard and F. S. Rugg.

The Michigan Central Railroad plans the installation of considerable new machinery and tools in its shops at St. Thomas, Ont., during the summer.

Bids are being received by N. A. Armstrong Co., Ltd., 7 King Street East, Toronto, for an addition to the factory of the National Show Case Co., 578 Queen Street East.

The Northern Electric Co., Ltd., 121 Shearer Street, Montreal, will erect an addition to its factory on St. Patrick Street.

Preparations are being made for the installation of a new mining plant at Gowganda, Ont., for the Millcrest Mining Co. William Fairburn, who is in charge of operations, states that plans have been prepared for an electrically-driven plant.

The Acadia Coal Co., Stellarton, N. S., has decided to install coal crushing plants at the Allan Shaft and the Albion mine.

The St. Lawrence Paper Mills, Ltd., Three Rivers, Que., will start construction at once to double the capacity of its plant. N. A. Timmins is president.

Western Canada

It is reported that the National Consolidated Industries, Ltd., will start construction within 60 days on a pulp mill at New Westminster, B. C., at an expenditure of approximately $2,000,000. It will be erected on Poplar Island. J. Randall Black of Edmonton, Alta.; George S. Whalen and John A. Whalen, formerly connected with the Whalen Pulp & Paper Co., are interested in the project. Sumner M. Bump is president.

The British Columbia Pulp & Paper Co., Ltd., Victoria, B. C., has been incorporated with a capital stock of $1,000,000 to take over the plant and operations of the Whalen Pulp & Paper Co., at Port Alice, Quatsino Sound, B. C. While the plans of the new company have not yet been made known, it is understood that the large mills at Port Alice will be reopened.

The Asser Diesel Engines, Ltd., recently incorporated in Vancouver, B. C., will erect a plant on Granville Island for the manufacture of an improved type of Diesel engine, ranging from 7 hp. to large logging or vessel engines. Sydney Asser is president of the company.

Pacific Coast

SAN FRANCISCO, Feb. 24.

THE Board of Education, Los Angeles, has plans under way for a one-story manual training shop, 40 x 160 ft., at the Warren G. Harding high school, Sawtelle, to cost $30,000. N. W. Alpaugh, 2404 West Seventh Street, is architect.

The Shafter Public Utility District, Shafter, Cal., plans the installation of pumping equipment in connection with extensions and improvements in the municipal waterworks. A bond issue is being arranged.

Charles K. Spaulding, president Spaulding Logging Co., Newberg, Ore., is at the head of a project to construct a new pulp and paper mill for the production of sulphite paper products. The initial plant is reported to cost $500,000 with machinery. A company is being organized with capital of $1,250,000 to carry out the enterprise.

The Seattle Lighting Co., Seattle, is disposing of a bond issue of $1,500,000, a portion of the proceeds to be used for extensions and improvements in plant and system.

The Northwestern Portland Cement Co., Portland, care of J. M. Scudder, Spalding Building, representative, recently organized with a capital of $2,500,000, is considering the construction of a new mill in the vicinity of Grotto, Wash., to cost close to $1,600,000. A power house built. The new company is headed by G. MacDonald and G. T. W. Hollister.

The Southwest Metals Co., Humboldt, Ariz., has tentative plans for the construction of a new custom milling plant to cost $200,000 with equipment.

The Great Western Power Co., 530 Bush Street, San Francisco, is completing plans for the construction of a new automatic power substation at Tuttle, near Merced, Cal., with capacity of 60,000 kva., estimated to cost $700,000 with equipment. The company also plans the erection of a similar substation at Isleton, near Sacramento, Cal., to cost $200,000, and for extensions in its substation on Fourth Avenue, Sacramento.

The City Council, Walla Walla, Wash., has tentative plans for the erection of a municipal electric light and power house.

The Washington Pulp & Paper Corporation, Port Angeles, Wash., has preliminary plans for extensions in its mill to double, approximately, the present output. It is expected to begin work in the spring. The company is also arranging for the construction of a hydroelectric power plant with initial capacity of 10,000 hp., on the Elwha River, in this vicinity.

Foreign

THE Amtorg Trading Corporation, 165 Broadway, New York, will make equipment purchases to an amount of about $3,500,000 for the new paper mill to be erected by the Central Paper Trust in the Soviet Union, Russia, known as the Centrobumtrust, to be located in Balakhna, near Nizzhni Novgorod. A delegation from the organization is now visiting the United States, with headquarters at the Amtorg offices, including Ivan M. Kolotilov, construction manager, and Ivan I. Kramtzov, chief engineer.

The Italian Public Utility Credit Institute, Rome, Italy, represented by Rushmore, Bisbee & Stern, 61 Broadway, New York, attorneys, is disposing of a bond issue of $20,000,000, a considerable portion of the proceeds to be used for hydroelectric power developments for affiliated electric light and power interests.

In connection with the opening of the first unit of a new plant at Slough, near London, England, by André Citroën, Paris, France, automobile manufacturer, the company has signed an agreement taking over 60 additional acres adjoining the works for the erection of proposed new units. The initial plant will approximate 500,000 sq. ft. of floor space and will have a capacity of about 200 complete cars per day.

A project is under way for the establishment of a joint fund by the district of Bitburg, the Allgemeine Elektrizitats Gesellschaft and the German Reich for the construction of a hydroelectric generating plant on the frontier between Luxemburg and Germany, using the Our and Irsen rivers as source of supply. The American Consulate, Berlin, Germany, Jacob G. Schurman, American Minister, has information regarding the enterprise.

Otto-Werft, Starnberg, Gustav Otto, Weidenmayer Strasse 46, Munich, Germany, associated manufacturers, are desirous of securing a source of supply for automobile parts, including engines, differentials, steering gears, etc., for local assembling of a medium-priced car, large scale production.

Antonio Torrens, Antonio Planas 21, Palma de Mallorga, Spain, is arranging for a plant to consist of a foundry, pattern shop, boiler, forge and machine shops and desires information regarding equipment. Catalogs and correspondence are preferred in Spanish.

Baldwin Locomotive Works Statement

Difficulty was experienced in 1925 by the Baldwin Locomotive Works in obtaining sufficient business to operate the plant and maintain the minimum organization. This accounts for the fact that dividends, for the second year in succession, were taken out of surplus. Gross sales are reported at $27,876,064, from which a profit of $196,564 was derived. Dividends amounting to $2,800,000 were paid, leaving a surplus at the end of the year at $15,763,833, compared with $18,367,269 at the end of 1924. Cost of manufacture aggregated $30,235,689, thus resulting in a manufacturing loss of $2,359,625. Profit on the year's operations was attained only by the inclusion of income from other sources than manufacturing, which amounted to $3,373,263. The balance sheet at the end of the year shows total assets and liabilities of $80,505,832, of which surplus and reserves account for $23,104,592. Current assets are $40,580,661 and current liabilities $7,031,050.

Branch Office Representatives of The Iron Age

Editorial

Chicago, Otis Bldg. ..... R. A. Fiske
Pittsburgh, Park Building ..... G. F. Tegan
Cleveland, 1362 Hanna Bol'ding ..... F. L. Prentiss
Cincinnati, First National Bank Bldg. ..... Burnham Finney
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Current Metal Prices

On Small Lots, Delivered from Stocks, New York

THESE prices are given for the convenience of small-lot buyers whose requirements do not run into mill-size orders.

Only base prices can be listed in some cases, due to limits of space; other items of a given group are deducible from the base price.

The prices which are quoted below are those at which small lots may be bought, whether from jobbers' or other stocks.

Complete market reports and prices on large shipments from mills will be found elsewhere under "Iron and Steel Markets" and "Non-Ferrous Metals."

Bars, Shapes and Plates

	Per Lb.
Bars:	
Refined iron bars, base price	3.24c.
Swedish charcoal iron bars, base	7.00c. to 7.25c.
Soft steel bars, base price	3.14c. to 3.24c.
Hoops, base price	4.49c.
Bands, base price	3.99c.
Beams and channels, angles and tees, 3 in. x ¼ in. and larger, base	3.24c. to 3.34c.
Channels, angles and tees under 3 in. x ¼ in. base	3.14c. to 3.24c.
Steel plates, ¼ in. and heavier	3.24c. to 3.34c.

Merchant Steel

	Per Lb.
Tire, 1½ x ½ in. and larger	3.30c.
(Smooth finish, 1 to 2½ x ¼ in. and larger)	3.65c.
Toe-calk, ½ x ⅜ in. and larger	4.20c.
Cold-rolled strip, soft and quarter hard	6.25c.
Open-hearth spring steel	4.50c. to 7.00c.
Shafting and Screw Stock:	
Rounds and hex.	4.00c. to 5.00c.
Squares and flats	4.50c. to 5.50c.
Standard tool steel, base price	12.00c.
Extra tool steel	15.00c. to 18.00c.
Special tool steel	20.00c. to 23.00c.
High-speed steel, 18 per cent tungsten	70c.

Sheets

Blue Annealed

	Per Lb.
No. 10	3.89c.
No. 12	3.94c.
No. 14	3.99c.
No. 16	4.09c.

Box Annealed—Black

	Soft Steel C. R. One Pass Per Lb.	Long Terne Sheets Per Lb.
Nos. 18 to 20	4.30c.	5.75c.
Nos. 22 and 24	4.35c.	5.90c.
No. 26	4.40c.	6.05c.
No. 28*	4.50c.	6.35c.
No. 30	4.70c.	6.85c.

Galvanized

	Per Lb.
No. 14	4.60c. to 4.75c.
No. 16	4.75c. to 4.90c.
Nos. 18 and 20	4.90c. to 5.05c.
Nos. 22 and 24	5.05c. to 5.20c.
No. 26	5.20c. to 5.35c.
No. 28*	5.50c. to 5.65c.
No. 30	6.00c. to 6.15c.

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

Welded Pipe

Standard Steel	Black	Galv.	*Wrought Iron*	Black	Galv.
½ in. Butt	46	29	½ in. Butt	4	+19
¾ in. Butt	51	37	¾ in. Butt	11	+ 9
1-3 in. Butt	53	39	1-1½ in. Butt	14	+ 6
2½-6 in. Lap	48	35	2-in. Lap	5	+14
7 & 8 in. Lap	44	17	3-6 in. Lap	11	+ 6
11 & 12 in. Lap	37	12	7-12 in. Lap	3	+16

Bolts and Screws

Machine bolts, cut thread, 40 and 10 per cent off list
Carriage bolts, cut thread, 30 and 10 per cent off list
Coach screws, 40 and 10 per cent off list
Wood screws, flat head iron,
77½, 20, 10, 10 and 10 per cent off list

Steel Wire

Base Price† on No. 9 Gage and Coarser	Per Lb.
Bright, basic	4.25c.
Annealed, soft	4.50c.
Galvanized, annealed	5.15c.
Coppered, basic	5.15c.
Tinned, soft Bessemer	6.15c.

†Regular extras for lighter gage.

Brass Sheet, Rod, Tube and Wire

BASE PRICE

High brass sheet	19⅛c. to 20⅛c.
High brass wire	19⅝c. to 20⅝c.
Brass rods	16⅞c. to 17⅞c.
Brass tube, brazed	27⅛c. to 28⅛c.
Brass tube, seamless	23¾c. to 24¾c.
Copper tube, seamless	24½c. to 25½c.

Copper Sheets

Sheet copper, hot rolled, 22¾c. to 23¾c. per lb. base.

Cold rolled, 14 oz. and heavier, 3c. per lb. advance over hot rolled.

Tin Plates

Bright Tin Grade "AAA" Charcoal 14x20	Bright Tin Grade "A" Charcoal 14x20	Coke—14x20	Prime	Seconds
		80 lb.	$6.15	$5.90
		90 lb.	6.30	6.05
		100 lb.	6.45	6.20
IC. $11.25	$8.85	IC.	6.65	6.40
IX. 12.85	10.85	IX.	7.85	7.60
IXX. 14.40	12.55	IXX.	9.00	8.75
IXXX. 15.75	13.85	IXXX.	10.35	10.10
IXXXX. 17.00	15.05	IXXXX.	11.35	11.10

Terne Plates

14 x 20

IC—8-lb. coating	$7.75 to $8.00
IC—20-lb. coating	10.00 to 11.00
IC—30-lb. coating	12.00 to 13.00
IC—40-lb. coating	13.75 to 14.25
Fire-door stock	10.50

Tin

Straits, pig	66c. to 66¾c.
Bar	69¼c. to 69¾c.

Copper

Lake ingot	15½c.
Electrolytic	15¼c.
Casting	15 c.

Spelter and Sheet Zinc

Western spelter	8¾c. to 9c.
Sheet zinc, No. 9 base, casks	13¼c.; open, 13¾c.

Lead and Solder*

American pig lead	9.85c. to 10.85c.
Bar lead	12c. to 13c.
Solder, ½ and ½ guaranteed	41 c.
No. 1 solder	40 c.
Refined solder	33¾c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb	68c. to 72c.
Commercial grade, per lb	30c. to 35c.

Antimony

Asiatic	23½c. to 25½c.

Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), ingots for remelting, per lb. 30c. to 30½c.

Old Metals

The market is unsettled. Dealers' buying prices are as follows:

	Cents Per Lb.
Copper, heavy crucible	12.00
Copper, heavy wire	11.75
Copper, light bottoms	9.50
Brass, heavy	7.00
Brass, light	6.25
Heavy machine composition	8.75
No. 1 yellow brass turnings	8.50
No. 1 red brass or composition turnings	8.00
Lead, heavy	7.50
Lead, tea	6.00
Zinc	4.50
Cast aluminum	18.00
Sheet aluminum	18.00